

FORPRIEM

Forest Practice Rules Implementation & Effectiveness Monitoring

(Formerly known as Modified Completion Report (MCR) Monitoring)

Monitoring Procedures and Methods

Revised September 14, 2007

Overview

The objective of the Forest Practice Rules Implementation & Effectiveness Monitoring (FORPRIEM) Program is to provide abundant data on the adequacy of the implementation and effectiveness of those Forest Practice Rules (FPRs) specifically designed to protect water quality and riparian/aquatic habitat. FORPRIEM (pronounced “for-prime”) uses information collected during completion inspections for Timber Harvesting Plans (THPs). FORPRIEM is a continuation of monitoring that was previously completed under the Modified Completion Report (MCR) Monitoring Program (Brandow, Cafferata and Munn 2006). The results from the MCR Monitoring Program conducted from 2001 to 2004 are available on-line in report published by CAL FIRE in 2006 at:

http://www.bof.fire.ca.gov/pdfs/MCRFinal_Report_2006_07_7B.pdf

Following are the FORPRIEM Methods and Procedures, which are an updated revision of the MCR Methods and Procedures. USE THESE METHODS AND PROCEDURES FOR FORPRIEM MONITORING. DO NOT USE THE MCR METHODS AND PROCEDURES. FORPRIEM includes three sampling protocols:

- 1) **WLPZ Canopy/Surface Cover Sampling Method**
- 2) **Road Sampling Method**
- 3) **Watercourse Crossing Sampling Method**

These methods will be applied to a random selection of approximately 10% of THPs with filing dates between 2002 and 2011, as the selected plans are completed. Lists of THP numbers randomly selected for FORPRIEM monitoring are included Appendix A-1.

On each listed THP, the following four randomly selected sample sites will be evaluated: 1) a 200-foot segment of Class I or II WLPZ, 2) a 660-foot (1/8th mile) segment of road, and 3) two Class I, II or III watercourse crossings. In the event a suitable sample site is not available on a listed THP, the method form should be turned in with a notation: “Not applicable to this THP.”

The selected monitoring sites will be evaluated at the time of the final Completion Report inspection(s). The sample road and the two sample watercourse crossings can be monitored for both implementation and effectiveness on this first evaluation if each has gone through at least one winter season. In the event the selected road segment and/or the two sample watercourse crossings have not yet been through at least one winter season, a return visit (maintenance inspection) to those sites will be necessary to monitor for

effectiveness in preventing erosion, sediment transport, and sediment transport to stream channels.

The FORPRIEM monitoring forms are attached to these instructions in Appendices A-2, A-3 and A-4 and are suitable for photocopying. Copies of the completed forms along with a photocopy of the THP map showing the location of the sample sites shall be sent to the Audit Forester for the Forest Practice Area where the THP is filed.

Field instruction on selecting the sample sites, evaluating the sites and completing the forms is available by contacting Clay Brandow at clay.brandow@fire.ca.gov or (916) 653-0719. If you have questions regarding FORPRIEM please contact Clay Brandow, Pete Cafferata, John Munn or your Audit Forester at their respective email addresses and phone numbers listed in CAL FIRE Outlook.

List of Items to take to the Field

- FORPRIEM Methods and Procedures for reference
- FORPRIEM Forms: WLPZ (1), Road (1), and Watercourse Crossings (2)
- THP file for reference
- THP WLPZ Map(s) with WLPZs segmented and sample segment randomly selected
- THP Road Map(s) with roads segmented and sample segment randomly selected
- Erosion Hazard Rating (EHR) from THP for randomly selected road segment
- Map scale or ruler, plus dividers (optional)
- Pencil, clipboard, and extra paper or notebook
- White flagging and marking pen
- Sighting tube
- Clinometer
- Hip-chain (String Box) with extra string
- Pocket tape measure or logger's tape
- Digital camera

Random Selection of THPs

FORPRIEM evaluations will be conducted at the time of the completion inspections on an approximately 10% random sample of THPs that have been or will be filed with CAL FIRE between the year 2002 and the year 2011. The middle number in a typical THP number indicates the year it was filed. For example, for the hypothetical THP number 1-04-999, the filing year would be 2004. Appendix A-1 contains randomly selected lists of FORPRIEM THPs for each filing year up to 2011.

THP numbers on the lists that will not go through an inspection report in the future for one reason or another should be crossed-off. Examples are THPs that have been withdrawn, administratively closed or that have already gone through a final completion inspection. Also, for years prior to the current calendar-year, cross-off hypothetical THPs numbers that were never assigned to a THP. Crossing-off these numbers does not

affect the sample size of approximately 10% of the THP going through completion report inspections.

These lists were generated using a Monte Carlo type method, which is basically a roll of the dice on each hypothetical THP number that was run through the program. This method eliminates the need to know how many plans will be filed by Region in future years. It also eliminates the need to know in advance which plans will not receive a completion inspection in the future. The program for generating these lists was written by Tim Robards in collaboration with Clay Brandow.

1) WLPZ Canopy/Surface Cover Sampling Method



Figure 1. Pete Cafferata making WLPZ canopy cover measurements using a sighting tube.

The WLPZ canopy/surface cover sampling procedure is to be completed once at the time of the Completion Report inspection. This FORPRIEM method is a modified version of Procedure 1 of the PHI and potential enforcement actions method developed by Robards (1999). The number of sighting tube observations is 50, as compared to 100 for the enforcement procedure. The inspector will also record the average WLPZ width based on pacing within the segment sampled for canopy cover and will record erosion features in the sample segment (i.e., gullies, rills, mass failures, or areas of sediment deposition).

Using a similar procedure for FORRIEM WLPZ canopy/surface cover sampling, pre-harvest inspections (PHIs), and enforcement has several advantages, including simplicity, continuity, and reducing the need for additional training. In addition, the data will be comparable. The enforcement data represents the worst-case post-harvest WLPZ conditions, while FORPRIEM represents the average WLPZ conditions. FORPRIEM data also allows us to look at trends in average post-harvest WLPZ conditions.

Selecting a WLPZ segment. The FORPRIEM method differs from Procedure 1 in the way the sample WLPZ segment is selected. Rather than selecting the least stocked reach for sampling, as in the enforcement method, in the FORPRIEM method the Class I and II watercourses on the THP are divided into 200-foot long, numbered segments on the THP map. Then using a random number table or calculator with a random number generator function, the inspector will generate a random number between the highest and lowest road number segment on the THP map. The segment that matches this number is the WLPZ segment to be evaluated, with two possible exceptions: 1) the WLPZ segment contains a road, watercourse crossing, cable yarding corridor or some other permitted large opening in the canopy, or 2) the WLPZ is deemed to be too dangerous to monitor

due to extreme terrain or some other reason. In the case of these two exceptions, randomly select an alternate WLPZ segment to evaluate. (Note that when using a random number table, cross off numbers as they are used, so they will not be used a second time.)

Figure 2 shows a typical THP map with 200-foot WLPZ segments marked off and numbered. The randomly selected segment is circled. A copy of the marked-up map used for selecting the WLPZ segment shall be submitted with the completed FORPRIEM WLPZ monitoring form.

Note that in many situations, like the one presented in Figure 2, more than one map will be needed. All segments shall be consecutively numbered for any given THP regardless of the number of maps. These maps often overlap, so care must be used to assign only one number to each 200-foot WLPZ segment.

Where only one side of the creek was harvested along the WLPZ segment to be evaluated, measure the side of the creek where this harvesting took place. Where both sides of the creek were harvested along the WLPZ segment to be evaluated, a flip of a coin shall be used to determine whether to measure the right or the left bank of the WLPZ.

WLPZ Canopy Sampling Procedure. Regardless of the size of the area, 50 points will be the target sample size. The following formula calculates the distance (D) between points. Width and length refer to the width and length of the WLPZ section to be sampled.

$$D = \sqrt{\frac{width \times length}{50}}$$

Since for FORPRIEM the sample length is a standard 200 feet, this equation can be simplified, as follows:

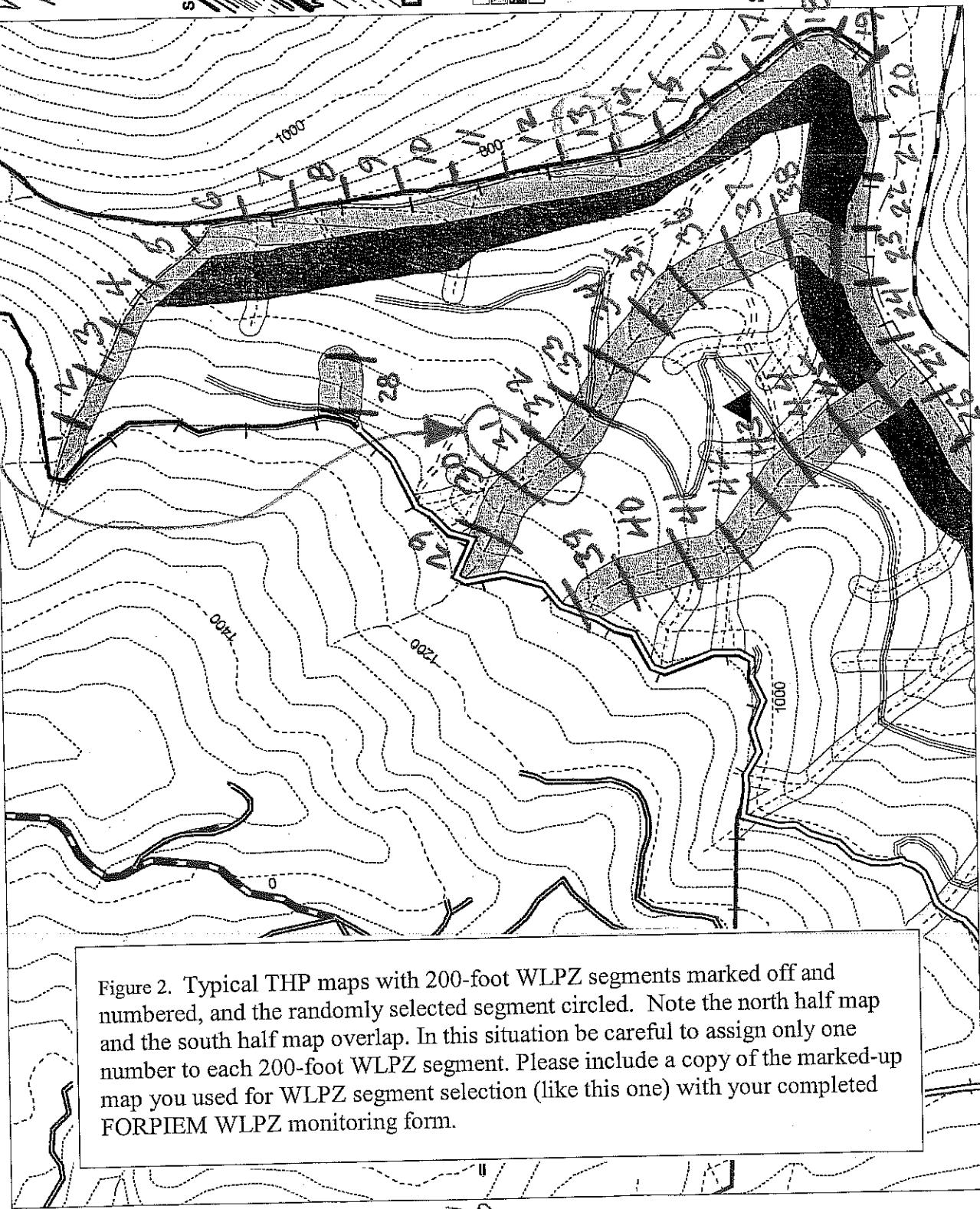
$$D = 2\sqrt{width}$$

Using this formula for standard WLPZ widths of 50, 75, 100, 150 and 200 feet, D is 14, 17, 20, 24 and 28 feet, respectively. For other WLPZ widths, the inspector will need to calculate D using the above formula.

The WLPZ width to utilize when calculating D is the width stated in the THP. Once the field sampling begins, continue to use the calculated D, even if the actual WLPZ width flagged on the ground is considerably wider than that stated in the plan. If the WLPZ width varies due to slope and the flagging results in a narrower WLPZ than was anticipated, do not take a sample point above the flag line. Simply turn 90 degrees and begin a new line going in the downhill direction. Stop when 50 points are achieved, regardless of whether this results in a line being completed.

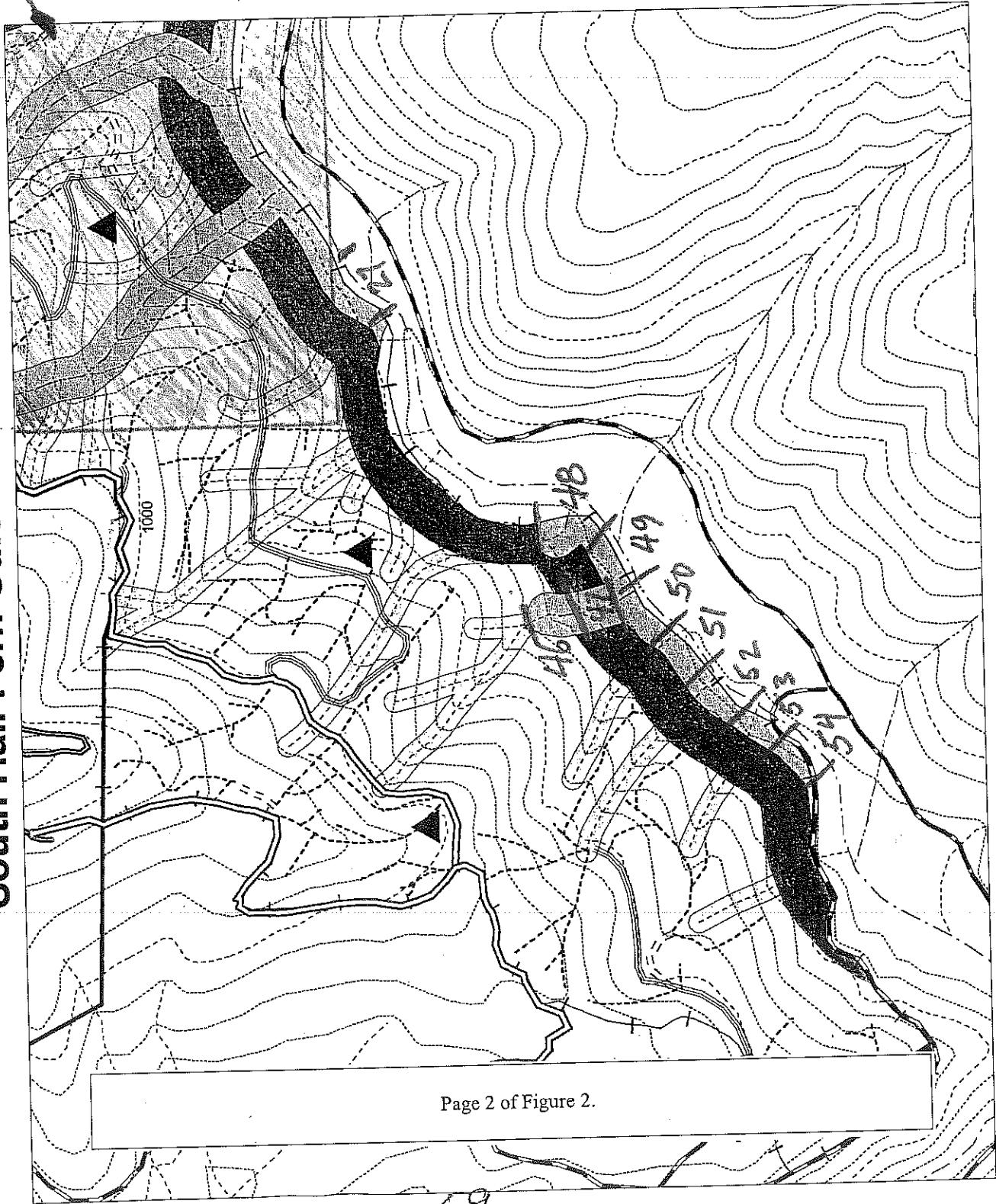
Silviculture Methods North Half Fern Gulch THP

1311 was the number generated at random, so this is the WLPZ to monitor.



Silviculture Methods South Half Fern Gulch THP

W Area Overlaps
With North Half
Fern Gulch THP
Map



Start in the corner of WLPZ segment at the watercourse transition line. The first measurement needs to be randomized. To randomize the first point, generate a random number between 0 and 1 using a random number table or random number generator. Then multiply this random number times D to calculate to distance to the first measurement point. For example, if D is 17 feet and the random number generated is 0.3, then the distance to the first measurement point from the watercourse transition line is $17 \text{ feet} \times 0.3 = 5.1 \approx 5$ feet. Pace 5 feet away from and perpendicular to the watercourse transition line. This is your first point. Collect **total canopy** data for this point using a vertical sighting tube (**i.e., do not try to differentiate between overstory and understory vegetation**). After the first sighting tube point, the distance to the next measurement point will always be D. From the first sighting tube measurement point, pace D feet to the next point away from and perpendicular to the watercourse. Continue to collect points on the line until the next point will exit the WLPZ. Then change direction 90°, pace D feet, and start a new line, this time heading towards the watercourse. The resulting pattern will look something like Figure 3.

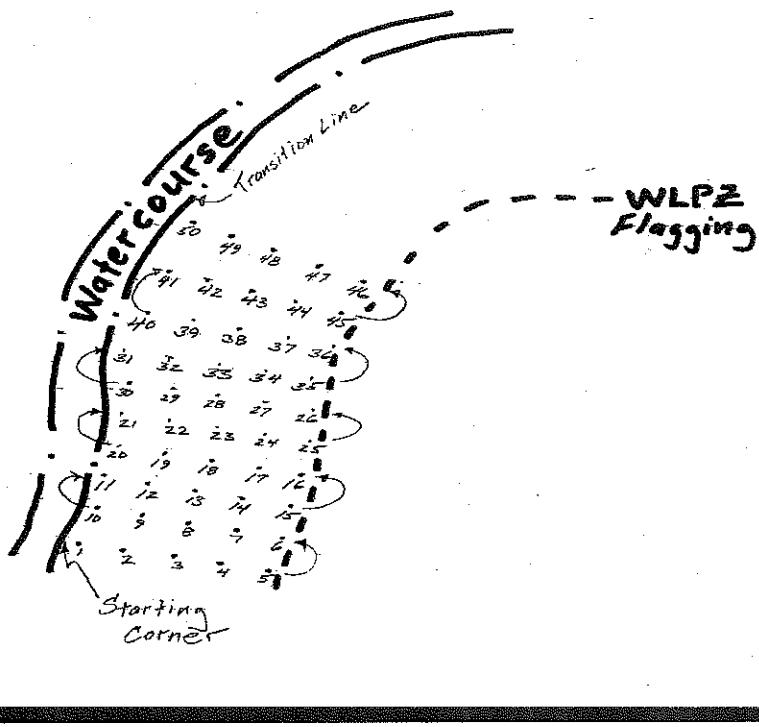


Figure 3. Typical pattern of canopy sighting and groundcover observation points within a typical randomly sampled WLPZ segment.

When using the vertical sighting tube at each point, first level it using the horizontal and vertical bubbles. Align the dot center by holding the tube steady and moving your head to put your eye in the correct position. The dot is then evaluated as to whether it intercepts canopy. Figure 4 shows a typical sighting tube. Hits are recorded as "+" in the hit column and misses are recorded as "-" in the miss column on the form provided. A blank form, suitable for photocopying, is included in Appendix A-2. If deciduous trees are encountered in the winter without leaves, it is permissible to assume that leaf cover

would be present in the summer. However, if hardwoods are present, it is best to attempt to do this work prior to winter.

On the bottom of the first page, there are a series eight (8) questions requiring ocular estimates with the WLPZ sample segment. Carefully observe the conditions within the WLPZ sample segment and circle the appropriate answer to each question based on what was observed.

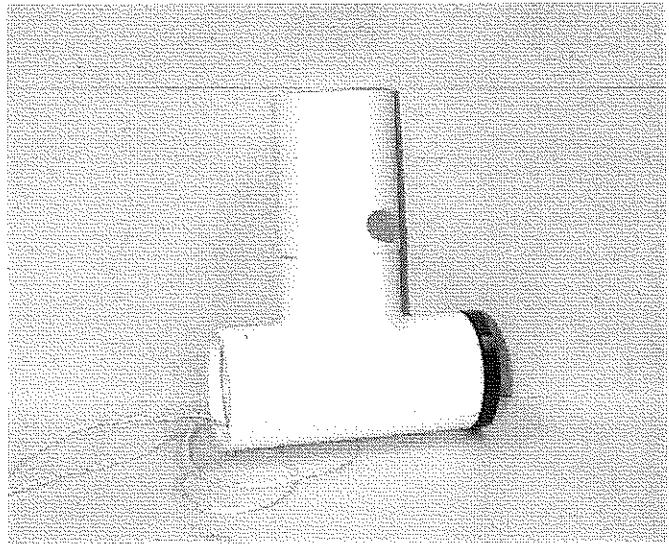


Figure 4. Example of a sighting tube used for making WLPZ canopy measurements.

Additionally, note and record fresh erosion features in the sample segment on the second page of the WLPZ form. A copy of this form that is suitable for photocopying is provided in Appendix A-2. A check box for "No erosion features observed in the sample WLPZ segment" is included on this form. In the event there are erosion features present, at each point in the sample WPLZ segment where erosion or deposition is observed, note the nearest canopy sample point by number, the type of erosion feature (i.e., gully, rilling, mass failure, or areas of sediment deposition), whether the feature is related to the current logging or not (yes or no), and the feature's approximate size (width, depth, and length) in feet. Record dimensions to the nearest half foot (0.5 feet). Record each erosion feature (e.g., gully, rill) only one time, even though it may be crossed or observed at several sample points. In the comments column, note the cause of the problem and if any sediment was transported to the channel.

Figure 5 is a completed WLPZ sample form. The first page records WLPZ canopy and the second page records erosion features. It is important to fill the forms out completely to assure good quality data. It is also very important to record the THP number, observer(s) and date on each page of the form in case the pages get separated.

FORPRIEM

Forest Practice Rules Implementation & Effectiveness Monitoring
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WLPZ Canopy Sampling Form

Revised 9/14/07

THP No. 1 - 04 - XXX

Observer(s) C. Brandon, P. Cafferata, J. Munn

Date 2-29-07

Estimated total length of Class I stream in this THP 5,600 feet.

Estimated total length of Class II stream in this THP 4,800 feet.

(Estimate by counting the number of segments delineated on the THP map for the random selection of sample a 200 foot WLPZ segment and multiply by 200.)

CALWATER Planning Watershed No. 3304.13010

Watercourse Class I or II (Circle the class that applies to the sampled segment.)

Target sample length is 200 feet.

Actual WLPZ sample length 200 feet.

Prescribed WLPZ width (from THP) 75 feet.

Actual WLPZ width (based on flagging) 75 feet.

Sampled WLPZ width 75 feet.

D = Distance between sample points.

(For standard WLPZ widths of 50, 75, 100, 150 and 200 feet,
 D is 14, 17, 20, 24 and 28 feet, respectively.)

$D = 2 \sqrt{width} = 17$ feet.

$100 \times (\text{Hits}) / (\text{Hits} + \text{Misses}) = 88\%$ Canopy Cover.

Ocular Estimates

within the WLPZ sample segment (circle one per question):

1. Harvesting in WLPZ segment this entry? YES NO
2. Percent Canopy removed this entry? 0-10% 10-30% 30-50% > 50%
3. Understory canopy remaining ≥ 50%? YES NO
4. Overstory canopy remaining ≥ 50%? YES NO
5. Class I watercourse in a T&I watershed? YES NO
6. Overstory meets T&I standards? N/A YES NO
7. WPLZ Groundcover (live&dead) ≥ 75 %? YES NO
8. Untreated patches of bare mineral soil in WLPZ ≥ 800 sq.ft. or as specified in THP? ABSENT PRESENT

Points	Hit (+)	Miss (-)
1.	+	
2.	+	
3.	+	
4.	+	
5.	+	
6.	+	
7.	+	
8.	+	
9.	+	
10.	+	
11.	+	
12.	+	
13.	+	
14.	+	
15.		=
16.		=
17.	+	
18.	+	
19.	+	
20.	+	
21.	+	
22.	+	
23.	+	
24.	+	
25.	+	
26.	+	
27.	+	
28.	+	
29.		
30.		
31.		
32.	+	
33.	+	
34.	+	
35.	+	
36.	+	
37.	+	
38.	+	
39.	+	
40.	+	
41.	+	
42.	+	
43.	+	
44.	+	
45.	+	
46.	+	
47.	+	
48.	+	
49.		=
50.	+	
Totals	44	6

Figure 5. Example of a completed FORPRIEM WLPZ form for purposes of demonstration. Note that both pages of the form are completed and that the THP number, the names of the observers and the date have been filled in on each page.

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WLPZ Erosion Features Form

Revised 9/14/07

THP No. 1-04-XXX
 Observer(s) C.Brandow, P.Cafferata, J.Munn
 Date 2-29-07

1. Were erosion features observed in the sample WLPZ segment (circle one)?

YES

NO

2. If the answer to the above question is YES, please complete one row in the table below for each erosion feature observed. Use additional sheets if necessary.

Point Number (Nearest WLPZ canopy measurement point.)	Erosion Feature Type (rills, gully, or sediment deposition.)	Related to the Current Entry (circle one)	Width (feet)	Depth (feet)	Length (feet)	Comments (Please note the cause of the problem and if any sediment was transported to the channel.)
45	Gully	<input checked="" type="radio"/> Yes No	2	1.5	16	Originated at skid trail just outside WLPZ. Deposition in channel
		Yes				
		No				
		Yes				
		No				
		Yes				
		No				

2) Road Sampling Method



Figure 6. Pete Cafferata recording road observations at a rolling dip. Orange box on his right hip is a hip-chain which meters-out string for tracking distances of specific road-related features along the sample segment.

One 660-foot (1/8 mile) road segment will be sampled on each selected THP if available. To randomly select a road segment, make a copy of the THP map(s) showing the roads. Using a scale or dividers and a pencil, divide the THP roads into 660-foot segments. Then number the segments. Do not include roads, such as county roads, where the landowner does not control road use and maintenance. Using a calculator with a random number generator or a random number table (see Appendix A-5), generate a random number between the lowest and highest numbered road segment. Circle the road segment that corresponds to this number. This is the segment to be evaluated. Please include a copy of the segmented THP map(s) with the completed FORPRIEM road evaluation forms. Figure 7 shows a typical set of THP maps with the roads divided into approximately 660-foot segments, the segments numbered, and the randomly selected road segment circled.

The selected road segment will be rated for implementation and effectiveness. Implementation can be rated at the time of the Completion Report inspection. Effectiveness may be rated during the same visit if the selected road segment has been through at least one winter period. If the selected road segment has not been through at least one winter period at the Completion inspection, another visit after the winter period to the site will be necessary to evaluate the road segment for effectiveness.

The road form has six (6) pages. The first page records site information, pages 2, 3 and 4 record implementation, and pages 5 and 6 record effectiveness. With exception of the space provided for comments at the end of page 6, pages 5 and 6 should not be completed until the watercourse crossing being evaluated has been through at least one winter period. A blank road form suitable for photo copying is included in Appendix A-3.

Road Construction and Reconstruction

North Half Fern Gulch THP

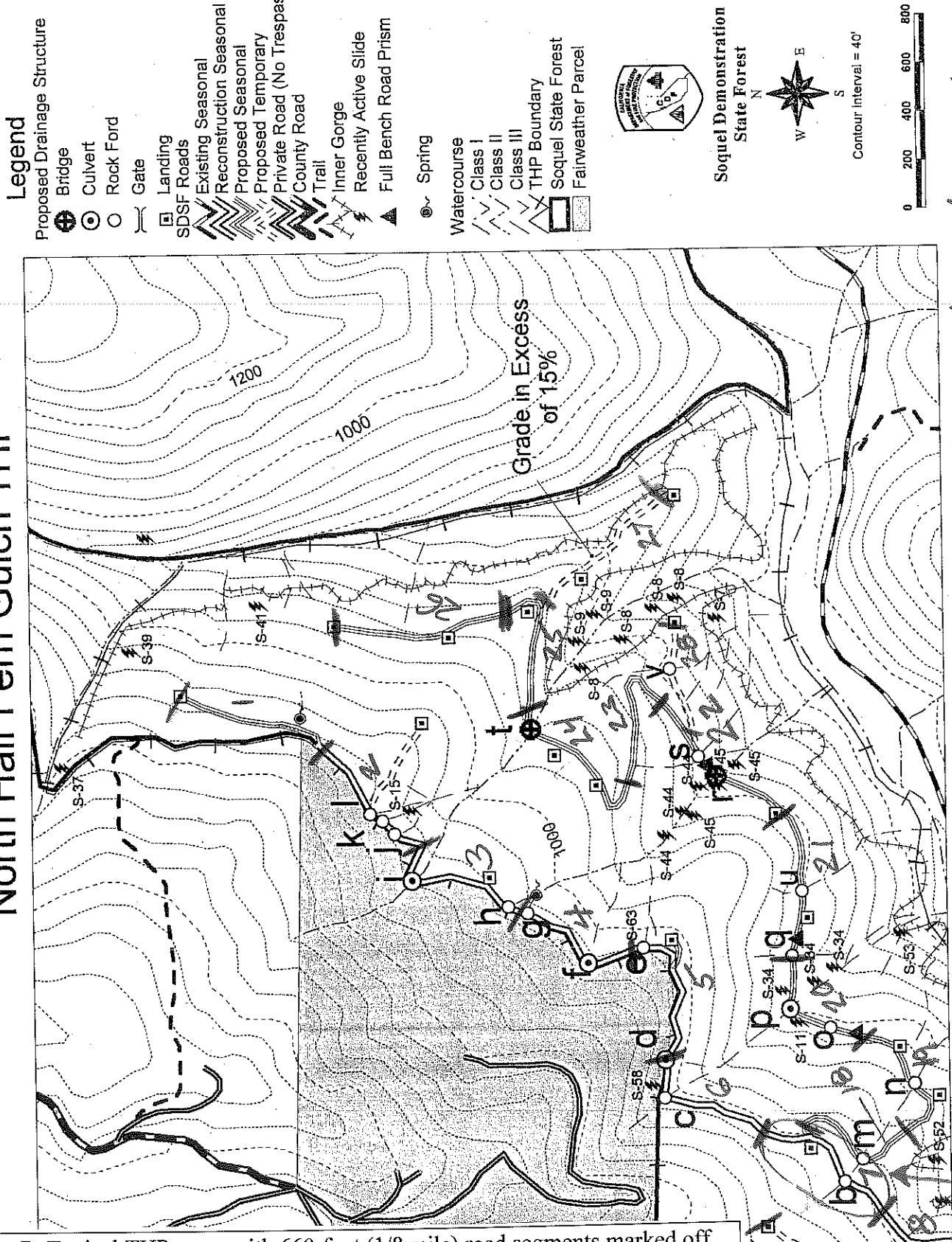


Figure 7. Typical THP maps with 660-foot (1/8 mile) road segments marked off and numbered, and the randomly selected segment circled. Note the north half map and the south half map overlap. In this situation be careful to assign only one number to each 660-foot road segment. Please include a copy of the marked-up map you used for road segment selection (like this one) with your completed FORPRIEM road monitoring form.

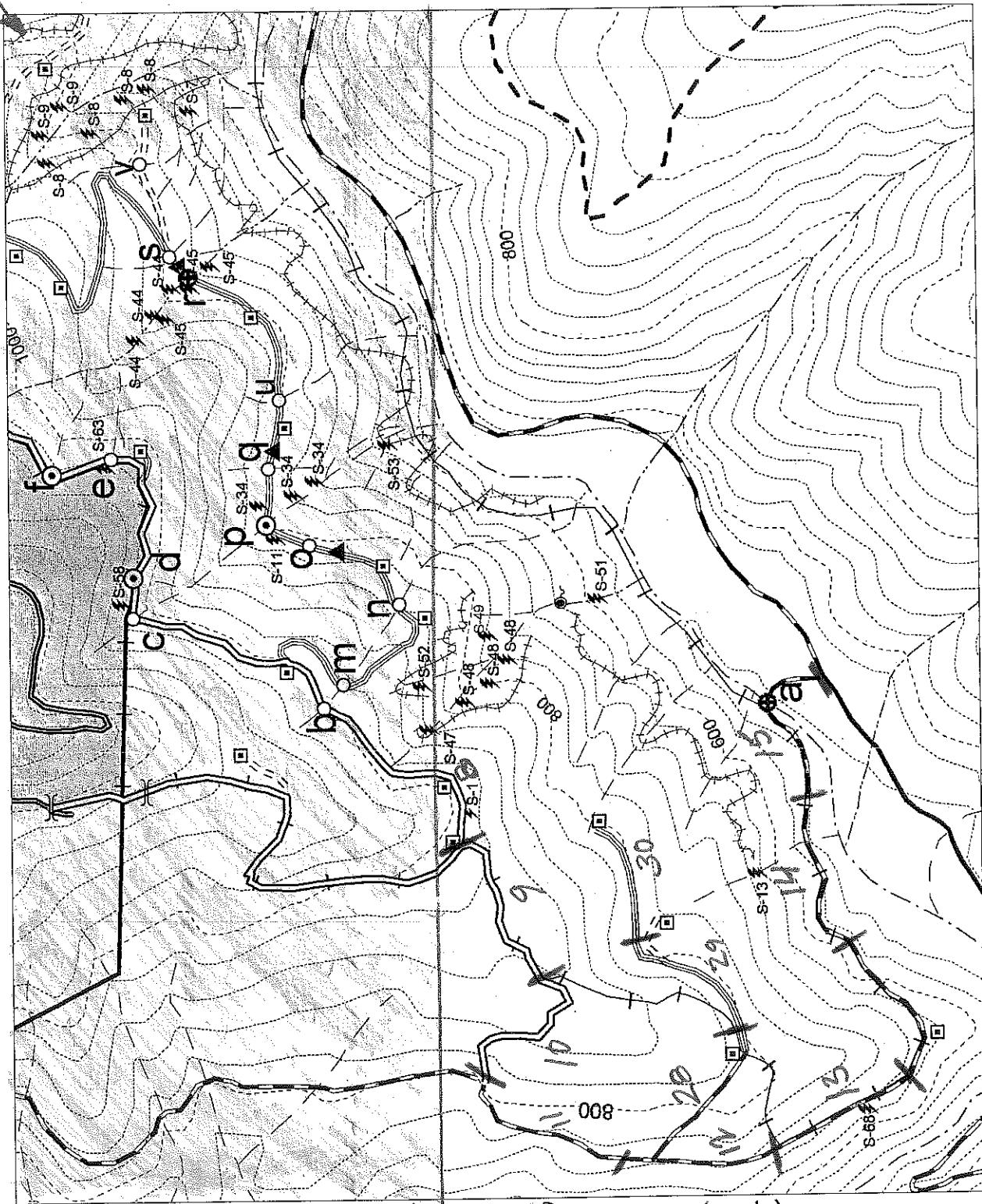
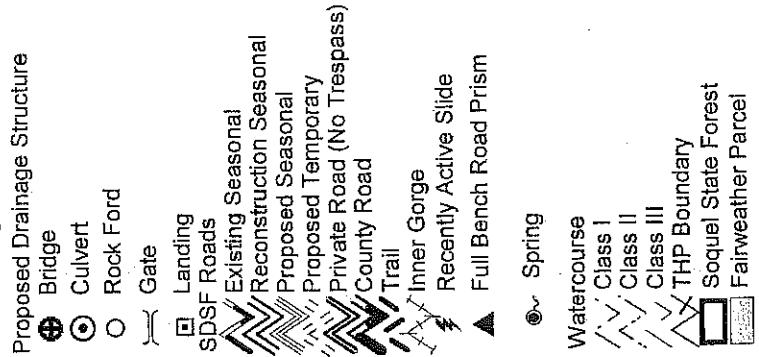
17 was the number generated at random, so this is the road segment to evaluate.

Road Construction and Reconstruction

South Half Fern Gulch THP

Area Overlaps
with North Half
Fern Gulch THP
Map

Legend



63

(Revised 5/25/04)

Figure 7.
Page 2 of 2.

Find the starting point of the selected road segment and flag it with the following information "THP# X-XX-XXX start FORPRIEM road segment." Complete the site information on the first page of the road form. You will need to look-up the Erosion Hazard Rating (EHR) for the selected road segment in the THP. The last question on the first page is "Recommend follow-up monitoring of this site based on problems found?" If significant erosion or any sediment transport to channels is found, circle "yes" in response to this question. Follow-up monitoring may be recommended for other reasons as well, such as failure of an adequately implemented FPR or mitigation measure to adequately control erosion.

Complete pages 2, 3 and 4 of the road form based on your observations of the road segment and drainage system. The form segments the road into sixty-six (66) 10-foot increments, starting on page 2 and ending on page 4. On the line labeled "Road Construction", choose the appropriate letters for each increment from the following: "CF" for cut & fill, "TC" for through-cut, "TF" for through-fill, or "FB" for full-bench cut. Indicate the location of each watercourse crossing in the road segment by inserting the appropriate following letter symbol in the corresponding box:

B = bridge	C = culvert	P-A = pipe-arch	OBA = open-bottom arch
Ford = Ford	A = abandoned	O = other	

On the line labeled "Road Surface," choose the appropriate letters for each increment from the following: "OS" for out-slope, "IS" for in-slope, "FL" for flat, or CR "crowned road surface" (i.e., road drains away from the highpoint in the middle towards both edges). Mark the appropriate boxes where there is an outside berm with a break. Mark the appropriate boxes where there is an inside ditch and indicate the location of ditch relief features with either a "C" for culvert, a "D" for dip, or an "O" for other. Rate the maintenance of each inside ditch and by circling "E" for exceeds rule, "A" for acceptable, "MA" for marginally acceptable, or "D" for departure.

Mark the location of waterbreaks and other road drainage structures with a "WB" for waterbar, an "RD" for rolling dip, "NL" natural low point, or "O" for other. Using a clinometer, measure the gradient between waterbreaks and record it on the next line about mid-way between waterbreaks indicated on the line above. Indicate whether it is upgrade (+) or downgrade (-) to the next waterbreak by using a plus (+) or minus (-) symbol or a minus in front of the percent road gradient. On the next line directly below each measurement of road gradient, record the estimated side slope of the natural terrain. Rate each waterbreak/drainage structure for implementation by circling the appropriate letter (E for exceeds rule, A for acceptable, MA for marginally-acceptable, or D for departure). Rate each waterbreak/drainage structure on whether it discharges into cover and not on to erodible fills by circling the appropriate letter (E, A, MA or D). Note any other implementation problems by making X-marks in the appropriate boxes on the line labeled "Other implementation problems explained in comments section." Briefly explain each of these problem in the comments section or additional sheets of paper. Refer to each problem by the road increment it affects. For example, if you observe an implementation

problem at 175 feet from the starting point, mark the box "170-180" and refer to it in the your comments as problem 170-180.

After the road segment has been through at least one winter, complete page 5 and 6 of the road form based on your observations of erosion, sediment transport beyond the road prism (e.g., toe of the fill), and sediment transport to watercourse channels. The form uses the same 10-foot increments as used for the implementation evaluation starting on page 5 and ending on page 6. Using the erosion symbols listed (both below and on the form), record erosion observed on the cut slope, the road surface, and the fill slope. Use the comment section at the end of page 6 to record the location and the estimated dimensions (length, width and depth) of gully, mass wasting, and sloughing erosion with a volume of approximately 3 cubic yards or more.

RT = ruts
R = rills (< 6" deep)
G = gullies (\geq 6" deep)
M = mass wasting
S = cutbank or sidecast sloughing
O = other erosion

Where evidence of sediment transport beyond the road prism (e.g., toe of the fill) is found in the selected road segment, write "ST" in the appropriate "Sediment Transport" box to indicate its location. Likewise, where evidence of sediment transport to a channel from the road is found, write "STC" in the appropriate box to indicate the point along road from which the sediment originated. **This step is extremely important – you must determine if sediment reached the stream channel.** Sediment transport beyond the road prism and sediment transport to the transition line of a channel can usually be detected by observing deposition of small amounts of fine sediment left along the margins of the path where sediment was transported (i.e., sediment plumes).

Figure 8 shows a completed road form. If possible, document significant erosion features with annotated digital photos and attach them to the completed road form. Also send labeled digital photos to the appropriate audit/monitoring forester for cataloging.

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ROAD FORM

Revised 9/14/07

Site Information

THP No. 1 - 04 - XXX

Observer(s)
C. Brandon
P. Cofferafa
J. Mann

Date 2-29-07

Erosion Hazard Rating (EHR from THP)(circle one): extreme

permanent seasonal

temporary abandoned other _____

high

moderate

low

Type of road (circle one):

native-surface

oiled

gravel/rocked

paved

other _____

Position of road segment on slope (circle one): road in WLPZ

mid-slope road

upper-slope road

ridge-road

Date of construction (circle one):

prior to THP

Current status (circle one):

existing

abandoned

Photos of this road segment were taken, annotated and attached to this monitoring form? Yes

No

Recommend follow-up monitoring of this site based on problems found?

No

Figure 8. Example of a completed FORPRIEM road form for purposes of demonstration. Note that all three pages of the form are completed and that the THP number, the names of the observers and the date have been filled in on each page.

ROAD IMPLEMENTATION FORM

THP No. 1 - 64 - XXXX

C. Brundage
P.C. offereata
Pygmy Parrot

Date 2-29-07 Observer(s) P. Coffey

Revised 9/14/07

Distance from the Starting Point in 10-Foot Increments

	000	010	020	030	040	050	060	070	080	090	100	110	120	130	140	150	160	170	180	190	200	210	220
Road Construction																							
CF=Cut & Fill, TC=Thru-Cut FB= Full Bench Cut																							
Watercourse Xing																							
B, C, P-A, OBA, F, A, O																							
Road Surface																							
OS=Out-Sloped IS=In-Sloped FL= Flat CR=Crowned																							
Outside Berm																							
Inside Ditch & Ditch Relief																							
Culvert, Dip or Other																							
Rate Maintenance of	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
Inside Ditch & Ditch	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Relief. (Circle E, A, MA or D)	MA																						
Waterbreaks																							
WB, RD, NL																							
Percent Road Gradient between Waterbreaks	-3%																						
Percent Side Slope between Waterbreaks	6%																						
Rate Waterbreaks constructed with a depth $\geq 6''$ into firm roadbed:	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
(Circle E, A, MA or D)	MA																						
Rate Waterbreaks discharge into cover and not onto erodible fills:	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
(Circle E, A, MA or D)	MA																						
Other implementation problems explained in comments section.																							

* E (Exceeds Rule), A (Acceptable), MA (Marginally Acceptable), D (Departure)

Figure 8.
Page 2 of 6.

ROAD IMPLEMENTATION FORM

THP No. / - 04 - XXX

C. Bryndum
Bryndum

Date 29-07 Page 3 of 6

Revised 09/14/07

		Observer(s)		Distance from the Starting Point in 10-Foot Increments									
Road Construction		220	230	240	250	260	270	280	290	300	310	320	330
CF=Cut & Fill,		230	240	250	260	270	280	290	300	310	320	330	340
TC= Thru-Cut													
FB= Full Bench Cut													
Watercourse Xing													
B, C, P-A, OBA, F, O													
Road Surface													
OS=Out-Sloped													
IS=In-Sloped													
FL= Flat													
Outside Berm													
Inside Ditch & Ditch Relief													
Culvert, Dip or Other													
Rate Maintenance of	E	E	E	E	E	E	E	E	E	E	E	E	E
Inside Ditch & Ditch	A	A	A	A	A	A	A	A	A	A	A	A	A
Relief: E, A, MA or D	MA	MA	MA	MA	MA	MA	MA	MA	MA	MA	MA	MA	MA
Waterbreaks													
WB, RD, NL, M													
Percent Road Gradient													
between Waterbreaks													
Percent Side Slope													
between Waterbreaks													
Rate Waterbreaks	E	E	E	E	E	E	E	E	E	E	E	E	E
constructed with a depth $\geq 6''$ into	A	A	A	A	A	A	A	A	A	A	A	A	A
firm roadbed:	MA	MA	MA	MA	MA	MA	MA	MA	MA	MA	MA	MA	MA
(circle E, A, MA or D)	D	D	D	D	D	D	D	D	D	D	D	D	D
Rate Waterbreaks	E	E	E	E	E	E	E	E	E	E	E	E	E
discharge into cover and not	A	A	A	A	A	A	A	A	A	A	A	A	A
onto erodible fills:	MA	MA	MA	MA	MA	MA	MA	MA	MA	MA	MA	MA	MA
(circle E, A, MA or D)	D	D	D	D	D	D	D	D	D	D	D	D	D
Other implementation problems													
explained in comments section.													

* E (Exceeds Rule), A (Acceptable), MA (Marginally Acceptable), D (Departure)

Figure 8.
Page 3 of 6.

ROAD IMPLEMENTATION FORM

THP No. ✓ - Off - XXX

*C. Brandon
P. Coffey
J. Dunn*

Appendix A-3
Date 2-29-07 Page 4 of 6

Revised 9/14/07

		Observer(s) <u>P. Coffey</u> Column																							
		Distance from the Starting Point in 10-Foot Increments																							
		440	450	460	470	480	490	500	510	520	530	540	550	560	570	580	590	600	610	620	630	640	650	660	
Road Construction		440	450	460	470	480	490	500	510	520	530	540	550	560	570	580	590	600	610	620	630	640	650	660	
CF=Cut & Fill, TC=Thru-Cut FB= Full Bench Cut																									
Watercourse Xing																									
B, C, P-A, OBA, F, O																									
Road Surface																									
OS=Out-Sloped IS=In-Sloped FL= Flat CR=Crowned																									
Outside Berm																									
Inside Ditch & Ditch Relief																									
Culvert, Dip or Other																									
Rate Maintenance of	E	E	E	E	E	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	
Inside Ditch & Ditch	A	A	A	A	A	MA																			
Relief. E, A, MA or D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	
Waterbreaks																									
WB, RD, NL																									
Percent Road Gradient between Waterbreaks																									
Percent Side Slope between Waterbreaks																									
Rate Waterbreaks constructed with a depth $\geq 6''$ into firm roadbed:	E	E	E	E	E	A	A	A	A	A	MA														
(Circle E, A, MA or D)	A	A	MA	D	D	D	D	D	D	D	D	D	D	D	D	D	D								
Rate Waterbreaks discharge into cover and not onto erodible fills:	E	E	E	E	E	E	E	E	E	E	A	A	A	A	A	A	A	A	A	A	A	A	A	A	
(Circle E, A, MA or D)	A	A	A	A	A	MA	MA	MA	MA	MA	D	D	D	D	D	D	D	D	D	D	D	D	D	D	
Other implementation problems explained in comments section.																									

* E (Exceeds Rule), A (Acceptable), MA (Marginally Acceptable), D (Departure)

20
Figure 8.
Page 4 of 6.

ROAD EFFECTIVENESS FORM
 THP No. 1 - 04 - XXX Observer(s) J. Munro

*C. Bayallow
P. C. Murrata*

Appendix A-3
 Page 5 of 6
 Revised 9/14/07

Evidence erosion features associated with this road segment (circle one):

present **absent**

Erosion Codes: RT=Ruts R=Rills G=Gullies M=Mass Wasting S=Cutbank or Sidecast Sloughing O=Other Erosion

		Distance from the Starting Point in 10-Foot Increments											
		000	010	020	030	040	050	060	070	080	090	100	110
		010	020	030	040	050	060	070	080	090	100	110	120
Erosion on Cut Slope (Insert erosion code)													
Erosion on Road Surface (Insert erosion code)													
Erosion on Fill Slope (Insert erosion code)													
Erosion downslope of Fill (Insert erosion code)													
Sediment Transport beyond road prism (toe of fill) (Insert "ST" in appropriate boxes)													
Sediment Transport to Channel Transition Line (Insert "STC" in appropriate boxes)													
Other problems (explain in the comments section)													
		Distance from the Starting Point in 10-Foot Increments											
		220	230	240	250	260	270	280	290	300	310	320	330
		230	240	250	260	270	280	290	300	310	320	330	340
Erosion on Cut Slope (Insert erosion code)													
Erosion on Road Surface (Insert erosion code)													
Erosion on Fill Slope (Insert erosion code)													
Erosion downslope of Fill (Insert erosion code)													
Sediment Transport beyond road prism (toe of fill) (Insert "ST" in appropriate boxes)													
Sediment Transport to Channel Transition Line (Insert "STC" in appropriate boxes)													
Other problems (explain in the comments section)													

Figure 8.
 Page 5 of 6.

3) Watercourse Crossing Sampling Method



Figure 9. Clay Brandow rating implementation and effectiveness of water quality related FPRs at a watercourse crossing.

Two (2) watercourse crossings will be sampled on each selected THP, if available. Each watercourse crossing will be rated for FPR implementation and effectiveness. Implementation can be rated on the first visit at the time of the Completion Report inspection. Effectiveness may be rated the same first visit if the watercourse crossing being evaluated has been through at least one winter period. If the watercourse crossing being evaluated has not been through at least one winter period at the time of first visit, a second visit after the winter period to the site will be necessary to evaluate the watercourse crossing for effectiveness. The watercourse crossing form has three (3) pages. The first page records site information, the second page records implementation and, the third page records effectiveness. The third page should not be completed until the watercourse crossing being evaluated has been through at least one winter period. A blank watercourse crossing form suitable for photo copying is included in Appendix A-4. You need to make two (2) copies of the form for each THP.

Selecting the two (2) Class I, II or III watercourse crossings for FORPRIEM monitoring. Step through the following process until two (2) watercourse crossings (Class I, II or III) are selected (include crossings abandoned as part of the current THP):

1. Select the first Class I, II or III watercourse crossing encountered within the 660-foot randomly selected road segment, if any. (Do not include cross-drain culverts. These are typically used for inside-ditch relief.)
2. Select the second Class I, II or III watercourse crossing encountered within the 660-foot randomly selected road segment, if any.
3. Select the Class I, II or III watercourse crossing that is closest to the 660-foot randomly selected road segment, if any.
4. Select the next closest Class I, II or III watercourse crossing to the 660-foot randomly selected road segment, if any.
5. If steps 1 through 4 did not yield two (2) watercourse crossings for monitoring, repeat steps 1 through 4, this time looking for Class IV watercourse crossings.
6. If steps 1 through 4 did not yield two (2) watercourse crossings for monitoring, crossings on a nearby skid road may be selected for monitoring.
7. If the THP includes no watercourse crossing, fill-out a watercourse crossing form with the THP number, the observer(s) and date. Then write on the form "Not applicable to this THP."

Instructions for Watercourse Crossings.

After selecting the two (2) Class I, II or III watercourse crossings for FORPRIEM monitoring using the stepwise process above, go to the first of the two watercourses. Flag the crossing with the following information "THP# X-XX-XXX FORPRIEM X-ing #1 month-day-year." Mark the location of the crossing on the copy of the THP map to be stapled to the FORPRIEM monitoring forms, and label it either "x-ing #1" or "x-ing #2," as appropriate.

From the watercourse crossing, walk the road in both directions. The length of road to be evaluated is determined by the points where drainage from the road surface, cuts, and fills no longer carries to the watercourse crossing. The evaluation includes the cut-off drainage structure that should route water away from the crossing.

Complete the first page of the watercourse crossing with information about the crossing site. Be sure to include the THP number, crossing number, observer's name(s) and the date.

Complete the second page by rating each of the applicable FPRs for implementation. For all crossings, rate each FPR under the section titled "All Watercourse Crossings" by circling the appropriate rating symbol on each line. If the crossing is a culvert/pipe arch, is abandoned/removed, or is a tractor road crossing, then circle one of following titles as appropriate for this crossing: "Culvert/Pipe Arch Crossings," "Abandoned/Removed" or "Tractor Road Crossings." Rate each FPR under the title circled by selecting the appropriate rating symbol on each line. Do not rate the FPRs under the two titles not circled. Be sure to include the THP number, crossing number, observer's name(s) and the

date at the top of this page of the form. The rating symbols stand for the following:

- ER (Exceeds Rule/THP requirements)
- A (Acceptable)
- MA (Marginally Acceptable)
- D (Departure)
- N/A (Not Applicable)

Complete the third page by evaluating effectiveness after the crossing has gone through at least one winter. For all crossings, rate effectiveness on the fill slopes (lines 1-3) and road surfaces draining the crossing (lines 1-5) by checking the appropriate box. If this crossing is a bridge, stop here. If the crossing is not a bridge, circle one of following titles as appropriate for this crossing: "Culvert Design/Configuration," "Non-Culvert Crossing", or "Removed/Abandoned Crossings." Under the circled title, rate each line item by checking the appropriate box. Do not rate the line items under the two titles not circled. Be sure to include the THP number, crossing number, observer's name(s) and the date at the top of this page of the form.

Repeat the above process for the second selected watercourse crossing.

Figure 10 is a completed watercourse crossing sample form, including the first page recording general information, the second page rating the implementation and third page rating effectiveness. It is important to fill the forms out completely to assure good quality data. It is also very important to record the THP number, observer(s) and date on each page of the form in case the pages get separated.

An expanded description of each line item (parameters) to be rated for effectiveness is provided below.

FILL SLOPES

Gullies: Gullies are greater than 6" deep. Determine as best as possible if the gullies appear to be enlarging and whether there is deposition into watercourse channels.

Cracks: As you survey the fillslopes, also note any evidence of cracks on the slope. Often these are present at the upper edge of the fillslope. Cracks are common as fill settles. Assess whether the cracks appear to be stabilized or widening (active). Look for signs of vegetation, litter or rounded edges to identify older features, and for sharp edges that indicate recent cracking.

Slope Failures: While surveying the fillslope, note instances of slope failure. Slope failures are indicated by movement of soil in blocks or slumps, rather than by rills, gullies or sheet erosion. Estimate whether the failures total between 0 and 1 cubic yard, 1 to 10 cubic yards, or greater than 10 cubic yards.

ROAD SURFACE DRAINING TO THE CROSSING

Gullies: Determine if gullies are present on the road surface draining towards the crossing. Determine if the gullies appear to be enlarging and whether there is deposition into watercourse channels.

Cutoff Drainage Structure: Evaluate the cutoff drainage structures to determine if they are preventing the passage of water down to the crossing location.

Inside Ditch Condition: If an inside ditch is present, evaluate its condition and how functional it is in routing water down to the inlet of the culvert.

Ponding: Observe the road surface for evidence of ponding of surface runoff. Normally, ponds form at the low points of the surface, where a berm or other feature prevents drainage. Minor ponding is to be expected, so examine the fillslope below areas where ponding is evident, to determine if the ponding has resulted or could result in slippage or failure of the fill.

Rutting (from vehicles): Determine if ruts from vehicles are present, and whether the ruts impair road drainage.

CULVERT DESIGN/CONFIGURATION

Crossing Failure: Note whether the crossing catastrophically failed.

Scour at Inlet and Outlet: Observe the stream channel at both the inlet and outlet of the culvert. If scour is evident, rate as minor or major scour. Major scour extends more than 2 channel widths below outlet, or undercuts crossing fill at either the inlet or the outlet.

Diversion Potential: Examine the grade of the roadway at the crossing. If the crossing fails (plugs up or fails to carry all of the flow), will the stream be diverted out of its channel and down the roadway, or will flow continue across the road and down the channel?

Plugging: Examine the inlet of the culvert and determine the presence and degree of blocking of the capacity of the culvert by debris (woody debris, soil, or rock).

Alignment: Observe the channel as it enters the culvert inlet and determine if there is basically a straight shot for water and debris to enter the pipe, or if there is a considerable angle between the channel and crossing center lines.

Degree of Corrosion: Use a screwdriver or similar tool and test the competency of the metal for steel pipes.

Crushed Inlet/Outlet: Determine if machinery or other impacts have deformed the pipe inlet or outlet.

Pipe Length: Determine if the pipe length is appropriate for the fill placed at the crossing, or if the pipe length is causing erosion problems.

Gradient: Determine if the gradient is appropriate or inappropriate. Improper gradient is evident when the pipe inlet or outlet is set too low in the channel or too high in the fill.

Piping: Examine the crossing fill and determine if piping of water around the culvert is occurring, whereby water is passing through the fill without going through the culvert.

NON-CULVERT CROSSINGS (e.g., Rocked Class III crossings)

Armoring: Evaluate the armoring present and determine if it is preventing downcutting at the crossing location.

Scour at Outlet: Observe the stream channel at the outlet of the crossing. Estimate the total amount of scour that has occurred and is likely to occur in the next 2 years, and rate accordingly.

Diversion of Flow: Examine the watercourse crossing and approaches to determine if they have been maintained to prevent diversion of stream overflow down the road should the crossing structure become plugged.

REMOVED OR ABANDONED CROSSINGS

Bank Stabilization: Determine if exposed soil on bank cuts have been stabilized to prevent transport of deleterious quantities of eroded soils to a watercourse.

Gullies: Gullies are greater than 6" deep. Determine if the gullies appear to be enlarging and whether there is deposition into watercourse channels.

Slope Failure: Slope failures are evidenced by movement of soil in blocks or slumps, rather than by rills, gullies or sheet erosion. Estimate whether the failures total less than 1 cubic yard, greater than one cubic yard without channel entry, or greater than 1 cubic yard with channel entry.

Channel Configuration: Examine restored channel configuration to determine if it is as wide or wider than the natural channel and as close as feasible to the natural watercourse grade and orientation.

Excavated Material: Examine sites where excavated soil material has been placed to determine if they are sloped back from the channel and stabilized to prevent slumping and minimize input into the channel.

Maintenance Free Drainage: Determine if the abandonment procedure does, and will continue to, provide permanent, maintenance free drainage.

Figure 10. Example of a completed FORPRIEM watercourse crossing form for purposes of demonstration. Note that all three pages of the form are completed and that the THP number, the names of the observers and the date have been filled in on each page.

FORPRIEM

Forest Practice Rules Implementation & Effectiveness Monitoring
(formerly known as Modified Completion Report (MCR) Monitoring)

WATERCOURSE CROSSING FORM

Revised 9/14/07

1. Site Information

THP No. 1 - 04 - XXX Crossing No. / Observer(s) B. Carter Date 2-29-07

Watercourse Class (circle one): I II III IV

Type of road (circle one): permanent seasonal temporary abandoned other _____

Type of crossing (circle one):	bridge	culvert	pipe-arch	open-bottom-arch	ford	other _____

Date of the Installation was (circle one): prior to THP part of THP

Current status (circle one): existing abandoned

Culvert diameter (circle one): N/A 12" 18" 24" 30" 36" 42" 48" 60" 72" Other _____

Multiple Culverts: N/A number of pipes _____ sizes _____ Other _____

Photos of this crossing/approaches taken, annotated and attached to this monitoring form

Recommend follow-up monitoring of this site based on problems found?

2. Rate this crossing for implementation by circling **ER** (Exceeds Rule), **A** (Acceptable), **MA** (Marginally Acceptable), **N/A** (Not Applicable) for each Forest Practice Rule on the following implementation rating page (pg. 2).

3. Rate this crossing for effectiveness by checking the appropriate box on each line of the effectiveness page, which follows the implementation page. Make sure that the crossing has been through at least one winter season prior to rating for effectiveness (pg. 3).

1 Make sure the THP Man showing the watercourse crossings sampled is attached.

Type of Crossing/Rule No.	Brief Rule Description	Implementation Rating (circle one for each rule)				Comments
<i>All Watercourse Crossings</i>						
923.2(h)	size, #, location of structures sufficient to carry runoff	ER	A	MA	D	N/A
923.2(h)	size, #, location of structures minimizes erosion	ER	A	MA	D	N/A
923.2(h)	size, #, location of structures-natural drainage pattern	ER	A	MA	D	N/A
923.3(a)	permanent xings shown on THP map (+pipe diameter(s) if appropriate)	ER	A	MA	D	N/A
923.3(c)	unrestricted passage of all life stages of fish allowed (where applicable)	ER	A	MA	D	N/A
923.3(f)	crossing/fills built or maintained to prevent diversion	ER	A	MA	D	N/A
923.4(c)	waterbreaks maintained as specified in 914.6	ER	A	MA	D	N/A
923.4(d)	crossing open to unrestricted passage of water	ER	A	MA	D	N/A
923.4(e)	permanent constructed/reconstructed--100-year flood flow + sediment and debris passage	ER	A	MA	D	N/A
923.4(m)	Inlet/outlet structures, additional drainage structures, etc. repaired/replaced/installed as needed to protect water crossing/approaches maintained to prevent diversion	ER	A	MA	D	N/A
923.4(n)	<i>Culvert/Pipe Arch</i> fills across channels built to minimize erosion	ER	A	MA	D	N/A
923.2(d)(Coast)	where evidence of debris likely to significantly reduce culvert capacity below design flow, oversize culverts, trash racks, or similar devices installed in a manner that minimizes culvert blockage	ER	A	MA	D	N/A
923.2(o)	no discharge on fill unless energy dissipators used	ER	A	MA	D	N/A
923.4(d)	trash racks installed where needed at inlets	ER	A	MA	D	N/A
923.4(l)	drainage structure & trash rack maintained/repaired to prevent blockage	ER	A	MA	D	N/A
<i>Abandoned/Removed</i>						
923.3(d)(1)	removed--fills excavated to reform channel	ER	A	MA	D	N/A
923.3(d)(2)	removed--cut bank sloped back to prevent slumping	ER	A	MA	D	N/A
923.3(d)(2) [required]	removed--where needed, stabilizing treatment applied	ER	A	MA	D	N/A
923.8	abandonment--maintenance free drainage	ER	A	MA	D	N/A
923.8	Abandonment--minimize concentration of runoff	ER	A	MA	D	N/A
923.8(b)	abandonment--stabilization of exposed cuts/fills	ER	A	MA	D	N/A
923.8(c)	abandonment--grading of road for dispersal of water	ER	A	MA	D	N/A
923.8(d)	abandonment--pulling/shaping of fills	ER	A	MA	D	N/A
923.8(e)	abandonment--fills excavated to reform channel	ER	A	MA	D	N/A
923.8(e)	abandonment--cutbanks sloped back	ER	A	MA	D	N/A
923.8(e)	removal not feasible--diversion potential handled	ER	A	MA	D	N/A
<i>Tractor Road Crossing</i>	structure (bridge, culvert, etc.) used where water present during life of the crossing	ER	A	MA	D	N/A
914.8(c)	unrestricted fish passage in Class I watercourse	ER	A	MA	D	N/A
914.8(d)	skid crossing fill removed and banks sloped properly	ER	A	MA	D	N/A

C. Brandow
P.C. Offender for
T.J. Munro

THP No. / - 04 - XXX Crossing No. / Observer(s) _____

WATERCOURSE CROSSING EFFECTIVENESS

[ALL] Fill Slopes (Check appropriate box on each line for all crossings.)

- | | | | | |
|--------------------------|------------------------------|--|---|--|
| 1) Gullies (>6" in deep) | <input type="checkbox"/> N/A | <input type="checkbox"/> None | <input type="checkbox"/> Small gullies, but not enlarging | <input type="checkbox"/> Large gullies or enlarging |
| 2) Cracks | <input type="checkbox"/> N/A | <input checked="" type="checkbox"/> None | <input type="checkbox"/> cracks present but stabilized | <input type="checkbox"/> cracks threaten stability of fill |
| 3) Slope Failure | <input type="checkbox"/> N/A | <input checked="" type="checkbox"/> None | <input type="checkbox"/> 0-1 cubic yard | <input type="checkbox"/> >10cubic yard |
- [ALL] Road Surface Draining to Crossing (Check appropriate box on each line for all crossings.)
- | | | | | |
|------------------------------|---|--|---|---|
| 1) Gullies (>6 in deep) | <input type="checkbox"/> N/A | <input type="checkbox"/> None | <input type="checkbox"/> Small gullies, but not enlarging | <input type="checkbox"/> Large gullies and enlarging |
| 2) Cutoff Drainage Structure | <input type="checkbox"/> N/A | <input type="checkbox"/> Functional | <input checked="" type="checkbox"/> Allows some water to reach crossing | <input type="checkbox"/> Allows all water to reach crossing |
| 3) Inside Ditch Condition | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> Open | <input type="checkbox"/> Some sediment/debris accumulation | <input type="checkbox"/> Blocked with sediment and debris |
| 4) Ponding | <input type="checkbox"/> N/A | <input checked="" type="checkbox"/> None | <input type="checkbox"/> Ponding present but does not threaten stability of fill material | <input type="checkbox"/> Ponding present and threatens the stability of the fill material |
| 5) Rutting | <input type="checkbox"/> N/A | <input checked="" type="checkbox"/> None | <input type="checkbox"/> Some ruts but drainage not impaired | <input type="checkbox"/> Rutting impairs road drainage |

[X] Culvert Design/Configuration (For culvert crossings, check box and check appropriate box on each line below, 1 thru 10.)

- | | | | | |
|--------------------------|------------------------------|---|--|---|
| 1) Scour at Inlet | <input type="checkbox"/> N/A | <input checked="" type="checkbox"/> None | <input type="checkbox"/> Minor scour—not undercutting fill | <input type="checkbox"/> Major scour, may be undercutting fill |
| 2) Scour at Outlet | <input type="checkbox"/> N/A | <input type="checkbox"/> No evidence | <input checked="" type="checkbox"/> Minor scour—extends < 2 channel widths | <input type="checkbox"/> Major scour, extends > 2 channel widths |
| 3) Diversion Potential | <input type="checkbox"/> N/A | <input type="checkbox"/> Not possible | <input type="checkbox"/> Road slopes downward in one direction with drainage structure | <input type="checkbox"/> If culvert fails, overflow will be diverted out of channel and down road |
| 4) Plugging | <input type="checkbox"/> N/A | <input checked="" type="checkbox"/> None | <input type="checkbox"/> Sediment/debris blocking <30% | <input type="checkbox"/> Sediment/debris blocking >30% of inlet/outlet |
| 5) Alignment | <input type="checkbox"/> N/A | <input checked="" type="checkbox"/> Appropriate | <input type="checkbox"/> Low angle channel approach | <input type="checkbox"/> High angle channel approach |
| 6) Degree of Corrosion | <input type="checkbox"/> N/A | <input checked="" type="checkbox"/> None/minor | <input type="checkbox"/> Moderate—some metal missing | <input type="checkbox"/> Severe—pipe easily punctured |
| 7) Crushing Inlet/Outlet | <input type="checkbox"/> N/A | <input checked="" type="checkbox"/> None | <input type="checkbox"/> Pipe deformed but <30% blocked | <input type="checkbox"/> Pipe deformed and >30% blocked |
| 8) Pipe Length | <input type="checkbox"/> N/A | <input checked="" type="checkbox"/> Appropriate | <input type="checkbox"/> Length causing minor fill erosion | <input type="checkbox"/> Length related to major erosion around pipe |
| 9) Gradient | <input type="checkbox"/> N/A | <input checked="" type="checkbox"/> Appropriate | <input type="checkbox"/> Inlet slightly too low or high in fill | <input type="checkbox"/> Inlet too high or low—causing debris to collect |
| 10) Piping | <input type="checkbox"/> N/A | <input checked="" type="checkbox"/> None | <input type="checkbox"/> Flow passes beneath or around culvert | |

[] Non-Culverted Crossing (For non-culverted crossings, check box and check appropriate box on each line below, 1 thru 3.)

- | | | | | |
|--------------------|------------------------------|---------------------------------------|--|---|
| 1) Armoring | <input type="checkbox"/> N/A | <input type="checkbox"/> Appropriate | <input type="checkbox"/> Minor downcutting evident | <input type="checkbox"/> Major downcutting evident |
| 2) Scour at Outlet | <input type="checkbox"/> N/A | <input type="checkbox"/> None | <input type="checkbox"/> Minor scour—not undercutting fill | <input type="checkbox"/> Major scour, maybe undercutting fill |
| 3) Diversion | <input type="checkbox"/> N/A | <input type="checkbox"/> Not possible | <input type="checkbox"/> Road slopes downward in one direction but unlikely to divert flow | <input type="checkbox"/> Overflow will be diverted down road |

[] Removed/Abandoned Crossings (For removed/abandoned crossings, check box and check appropriate box on each line below.)

- | | | | | |
|------------------------------|------------------------------|--|--|---|
| 1) Bank Stabilization | <input type="checkbox"/> N/A | <input type="checkbox"/> Dense cover or stabilized | <input type="checkbox"/> >50% of banks covered and/or stabilized | <input type="checkbox"/> <50% of banks have effective cover or stabilized |
| 2) Gullies (>6 in deep) | <input type="checkbox"/> N/A | <input type="checkbox"/> None | <input type="checkbox"/> Small gullies, not enlarging | <input type="checkbox"/> Large gullies or enlarging |
| 3) Slope Failure | <input type="checkbox"/> N/A | <input type="checkbox"/> <1 cu yd | <input type="checkbox"/> >1 cu yd and enters channel | <input type="checkbox"/> >1 cu yd |
| 4) Channel Configuration | <input type="checkbox"/> N/A | <input type="checkbox"/> Near natural | <input type="checkbox"/> Minor difference from natural channel | <input type="checkbox"/> Major difference from natural channel |
| 5) Excavated Material | <input type="checkbox"/> N/A | <input type="checkbox"/> Sloped to min. erosion | <input type="checkbox"/> <1 cubic yard transported to channel | <input type="checkbox"/> >1 cubic yard transported to channel |
| 6) Maintenance Free Drainage | <input type="checkbox"/> N/A | <input type="checkbox"/> Sufficient | <input type="checkbox"/> Minor problem(s) noted | <input type="checkbox"/> Major problem(s) noted |

REFERENCES

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Robards, T. 1999. Instructions for WLPZ Canopy /Surface Cover Sampling (Canopy Enforcement Protocol). California Department of Forestry and Fire Protection –Forest Practice. Sacramento, CA. 9 p.
http://cdfweb/Forestry/tools_trade/InstructionsforWLPZSampling.pdf

FORPRIEM

Forest Practice Rules Implementation & Effectiveness Monitoring
(formerly known as Modified Completion Report (MCR) Monitoring)

Appendices

Randomly selected THP numbers for THPS dated 2002 thru 2011.....	Appendix A-1
FORPREIM WLPZ form.....	Appendix A-2
FORPREIM road form.....	Appendix A-3
FORPREIM watercourse crossing form.....	Appendix A-4
Random number table.....	Appendix A-5

Note: Provided for convenience. Any random number table or random number generating calculator may be used to randomly select WLPZ reaches and road segments.)

FORPRIEM

Appendix A-1 page 1 of 7

Forest Practice Rules Implementation and Effectiveness Monitoring

Region-1 Randomly Selected THPs Numbers (Page 1 of 3)

(version 2/02/07)

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
1-02-027	1-03-006	1-04-009	1-05-004	1-06-007	1-07-008	1-08-014	1-09-005	1-10-009	1-11-007
1-02-050	1-03-024	1-04-016	1-05-028	1-06-017	1-07-025	1-08-022	1-09-007	1-10-016	1-11-012
1-02-065	1-03-029	1-04-023	1-05-030	1-06-023	1-07-040	1-08-028	1-09-026	1-10-021	1-11-023
1-02-078	1-03-040	1-04-026	1-05-041	1-06-032	1-07-062	1-08-063	1-09-060	1-10-025	1-11-024
1-02-079	1-03-041	1-04-033	1-05-049	1-06-045	1-07-064	1-08-128	1-09-066	1-10-051	1-11-039
1-02-097	1-03-042	1-04-046	1-05-064	1-06-049	1-07-082	1-08-135	1-09-073	1-10-056	1-11-049
1-02-105	1-03-060	1-04-050	1-05-089	1-06-060	1-07-100	1-08-140	1-09-084	1-10-066	1-11-062
1-02-121	1-03-062	1-04-051	1-05-097	1-06-066	1-07-112	1-08-144	1-09-091	1-10-070	1-11-070
1-02-122	1-03-065	1-04-091	1-05-098	1-06-073	1-07-124	1-08-171	1-09-095	1-10-107	1-11-082
1-02-137	1-03-067	1-04-097	1-05-116	1-06-076	1-07-131	1-08-175	1-09-117	1-10-108	1-11-098
1-02-143	1-03-078	1-04-101	1-05-129	1-06-090	1-07-138	1-08-176	1-09-122	1-10-110	1-11-108
1-02-155	1-03-098	1-04-120	1-05-134	1-06-107	1-07-146	1-08-180	1-09-129	1-10-113	1-11-134
1-02-159	1-03-117	1-04-124	1-05-152	1-06-115	1-07-147	1-08-181	1-09-135	1-10-116	1-11-140
1-02-167	1-03-126	1-04-125	1-05-155	1-06-117	1-07-149	1-08-223	1-09-147	1-10-136	1-11-141
1-02-176	1-03-127	1-04-130	1-05-161	1-06-135	1-07-160	1-08-247	1-09-157	1-10-138	1-11-143
1-02-177	1-03-129	1-04-132	1-05-174	1-06-146	1-07-161	1-08-255	1-09-167	1-10-141	1-11-152
1-02-182	1-03-137	1-04-133	1-05-176	1-06-170	1-07-181	1-08-260	1-09-168	1-10-152	1-11-164
1-02-191	1-03-141	1-04-139	1-05-181	1-06-187	1-07-198	1-08-261	1-09-175	1-10-153	1-11-165
1-02-194	1-03-153	1-04-141	1-05-182	1-06-188	1-07-203	1-08-263	1-09-176	1-10-168	1-11-169
1-02-196	1-03-170	1-04-146	1-05-188	1-06-210	1-07-238	1-08-271	1-09-186	1-10-172	1-11-180
1-02-217	1-03-177	1-04-164	1-05-199	1-06-217	1-07-260	1-08-274	1-09-190	1-10-185	1-11-184
1-02-218	1-03-189	1-04-171	1-05-229	1-06-224	1-07-271	1-08-286	1-09-194	1-10-190	1-11-206
1-02-223	1-03-193	1-04-176	1-05-246	1-06-249	1-07-273	1-08-292	1-09-198	1-10-192	1-11-208
1-02-226	1-03-194	1-04-184	1-05-253	1-06-252	1-07-278	1-08-301	1-09-211	1-10-197	1-11-214
1-02-236	1-03-206	1-04-185	1-05-260	1-06-259	1-07-282	1-08-310	1-09-218	1-10-206	1-11-256
1-02-239	1-03-209	1-04-204	1-05-264	1-06-291	1-07-302	1-08-322	1-09-219	1-10-221	1-11-265
1-02-240	1-03-211	1-04-235	1-05-280	1-06-292	1-07-338	1-08-324	1-09-228	1-10-227	1-11-267
1-02-245	1-03-223	1-04-243	1-05-303	1-06-304	1-07-339	1-08-333	1-09-231	1-10-235	1-11-274
1-02-250	1-03-229	1-04-244	1-05-308	1-06-309	1-07-356	1-08-336	1-09-241	1-10-240	1-11-276
1-02-252	1-03-233	1-04-254	1-05-310	1-06-324	1-07-367	1-08-346	1-09-277	1-10-251	1-11-298
1-02-259	1-03-234	1-04-260	1-05-311	1-06-336	1-07-374	1-08-349	1-09-282	1-10-275	1-11-322
1-02-271	1-03-243	1-04-262	1-05-315	1-06-345	1-07-397	1-08-350	1-09-287	1-10-277	1-11-323
1-02-277	1-03-247	1-04-263	1-05-335	1-06-349	1-07-402	1-08-356	1-09-288	1-10-281	1-11-327
1-02-279	1-03-249	1-04-267	1-05-338	1-06-354	1-07-422	1-08-365	1-09-293	1-10-294	1-11-328
1-02-283	1-03-265	1-04-298	1-05-353	1-06-357	1-07-425	1-08-377	1-09-303	1-10-300	1-11-342
1-02-293	1-03-269	1-04-301	1-05-355	1-06-360	1-07-435	1-08-378	1-09-309	1-10-306	1-11-345
1-02-296	1-03-280	1-04-314	1-05-372	1-06-362	1-07-442	1-08-385	1-09-321	1-10-307	1-11-364
1-02-316	1-03-285	1-04-320	1-05-388	1-06-368	1-07-453	1-08-422	1-09-332	1-10-310	1-11-366
1-02-321	1-03-288	1-04-334	1-05-396	1-06-389	1-07-454	1-08-431	1-09-352	1-10-323	1-11-367
1-02-329	1-03-301	1-04-335	1-05-401	1-06-395	1-07-464	1-08-432	1-09-354	1-10-327	1-11-386
1-02-335	1-03-304	1-04-350	1-05-402	1-06-421	1-07-473	1-08-436	1-09-356	1-10-329	1-11-391
1-02-340	1-03-330	1-04-352	1-05-407	1-06-425	1-07-477	1-08-442	1-09-365	1-10-338	1-11-397
1-02-341	1-03-331	1-04-0367	1-05-408	1-06-426	1-07-492	1-08-457	1-09-375	1-10-345	1-11-413

FORPRIEM

Appendix A-1 page 2 of 7

Forest Practice Rules Implementation and Effectiveness Monitoring

Region-1 Randomly Selected THPs Numbers (Page 2 of 3)

(version 2/02/07)

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
1-02-373	1-03-354	1-04-369	1-05-410	1-06-427	1-07-504	1-08-461	1-09-385	1-10-359	1-11-418
1-02-378	1-03-358	1-04-372	1-05-411	1-06-466	1-07-505	1-08-462	1-09-398	1-10-366	1-11-436
1-02-379	1-03-363	1-04-377	1-05-418	1-06-499	1-07-506	1-08-463	1-09-412	1-10-372	1-11-440
1-02-381	1-03-366	1-04-385	1-05-419	1-06-508	1-07-542	1-08-470	1-09-414	1-10-384	1-11-446
1-02-383	1-03-371	1-04-396	1-05-422	1-06-513	1-07-552	1-08-475	1-09-422	1-10-391	1-11-462
1-02-388	1-03-373	1-04-409	1-05-427	1-06-520	1-07-553	1-08-482	1-09-425	1-10-403	1-11-469
1-02-396	1-03-379	1-04-412	1-05-428	1-06-549	1-07-556	1-08-491	1-09-428	1-10-405	1-11-476
1-02-402	1-03-398	1-04-415	1-05-439	1-06-560	1-07-557	1-08-501	1-09-438	1-10-410	1-11-489
1-02-413	1-03-409	1-04-422	1-05-442	1-06-568	1-07-563	1-08-502	1-09-444	1-10-419	1-11-498
1-02-422	1-03-410	1-04-444	1-05-466	1-06-580	1-07-564	1-08-503	1-09-450	1-10-421	1-11-507
1-02-435	1-03-416	1-04-456	1-05-473	1-06-591	1-07-583	1-08-505	1-09-456	1-10-437	1-11-511
1-02-436	1-03-435	1-04-485	1-05-479	1-06-595	1-07-594	1-08-509	1-09-461	1-10-451	1-11-523
1-02-470	1-03-441	1-04-490	1-05-493	1-06-604	1-07-602	1-08-525	1-09-508	1-10-456	1-11-531
1-02-475	1-03-457	1-04-495	1-05-500	1-06-605	1-07-609	1-08-542	1-09-517	1-10-486	1-11-540
1-02-476	1-03-461	1-04-517	1-05-502	1-06-607	1-07-622	1-08-552	1-09-527	1-10-493	1-11-562
1-02-481	1-03-462	1-04-521	1-05-522	1-06-619	1-07-628	1-08-564	1-09-528	1-10-495	1-11-569
1-02-487	1-03-473	1-04-548	1-05-523	1-06-629	1-07-652	1-08-574	1-09-537	1-10-503	1-11-576
1-02-497	1-03-484	1-04-549	1-05-542	1-06-644	1-07-658	1-08-580	1-09-538	1-10-505	1-11-591
1-02-504	1-03-491	1-04-553	1-05-553	1-06-650	1-07-663	1-08-584	1-09-541	1-10-508	1-11-596
1-02-505	1-03-516	1-04-555	1-05-554	1-06-679	1-07-667	1-08-588	1-09-548	1-10-510	1-11-610
1-02-552	1-03-523	1-04-564	1-05-562	1-06-690	1-07-676	1-08-607	1-09-571	1-10-519	1-11-612
1-02-553	1-03-531	1-04-565	1-05-593	1-06-699	1-07-689	1-08-620	1-09-572	1-10-522	1-11-638
1-02-566	1-03-537	1-04-608	1-05-594	1-06-700	1-07-696	1-08-643	1-09-575	1-10-536	1-11-644
1-02-567	1-03-546	1-04-611	1-05-599	1-06-701	1-07-700	1-08-646	1-09-590	1-10-561	1-11-647
1-02-570	1-03-554	1-04-612	1-05-625	1-06-713	1-07-732	1-08-652	1-09-611	1-10-565	1-11-659
1-02-572	1-03-567	1-04-622	1-05-629	1-06-726	1-07-740	1-08-664	1-09-636	1-10-574	1-11-670
1-02-575	1-03-568	1-04-649	1-05-640	1-06-732	1-07-745	1-08-675	1-09-642	1-10-580	1-11-671
1-02-576	1-03-569	1-04-653	1-05-642	1-06-734	1-07-758	1-08-691	1-09-646	1-10-583	1-11-681
1-02-589	1-03-579	1-04-670	1-05-645	1-06-745	1-07-760	1-08-696	1-09-649	1-10-584	1-11-685
1-02-609	1-03-584	1-04-674	1-05-649	1-06-761	1-07-772	1-08-698	1-09-660	1-10-588	1-11-696
1-02-625	1-03-601	1-04-693	1-05-652	1-06-770	1-07-774	1-08-705	1-09-663	1-10-594	1-11-697
1-02-626	1-03-602	1-04-708	1-05-662	1-06-785	1-07-780	1-08-725	1-09-676	1-10-602	1-11-718
1-02-633	1-03-603	1-04-734	1-05-691	1-06-794	1-07-790	1-08-736	1-09-679	1-10-611	1-11-747
1-02-641	1-03-604	1-04-741	1-05-716	1-06-806	1-07-794	1-08-743	1-09-704	1-10-619	1-11-753
1-02-664	1-03-611	1-04-750	1-05-721	1-06-832	1-07-797	1-08-751	1-09-709	1-10-621	1-11-757
1-02-668	1-03-621	1-04-753	1-05-748	1-06-840	1-07-812	1-08-755	1-09-724	1-10-631	1-11-764
1-02-682	1-03-625	1-04-770	1-05-771	1-06-857	1-07-817	1-08-774	1-09-749	1-10-636	1-11-767
1-02-687	1-03-626	1-04-771	1-05-776	1-06-861	1-07-820	1-08-785	1-09-753	1-10-652	1-11-787
1-02-689	1-03-645	1-04-776	1-05-782	1-06-866	1-07-849	1-08-790	1-09-772	1-10-659	1-11-796
1-02-727	1-03-662	1-04-806	1-05-835	1-06-871	1-07-856	1-08-794	1-09-780	1-10-670	1-11-797
1-02-736	1-03-677	1-04-814	1-05-841	1-06-872	1-07-857	1-08-801	1-09-792	1-10-673	1-11-801
1-02-757	1-03-681	1-04-817	1-05-886	1-06-883		1-08-827	1-09-806	1-10-674	1-11-809
1-02-765	1-03-682	1-04-833	1-05-888	1-06-885		1-08-849	1-09-809	1-10-690	1-11-810

FORPRIEM

Appendix A-1 page 3 of 7

Forest Practice Rules Implementation and Effectiveness Monitoring

Region-1 Randomly Selected THPs Numbers (Page 3 of 3)

(version 2/02/07)

FORPREIM

Appendix A-1 page 4 of 7

Forest Practice Rule Implementation and Effectiveness Monitoring

Region-2 Randomly Selected THPs Numbers

(Page 1 of 2)

(version 2/02/07)

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
2-02-027	2-03-008	2-04-011	2-05-016	2-06-007	2-07-001	2-08-004	2-09-023	2-10-012	2-11-007
2-02-037	2-03-014	2-04-018	2-05-022	2-06-027	2-07-012	2-08-009	2-09-034	2-10-018	2-11-023
2-02-046	2-03-026	2-04-023	2-05-028	2-06-044	2-07-023	2-08-026	2-09-042	2-10-039	2-11-026
2-02-050	2-03-044	2-04-024	2-05-029	2-06-046	2-07-025	2-08-041	2-09-061	2-10-056	2-11-027
2-02-052	2-03-079	2-04-035	2-05-065	2-06-073	2-07-028	2-08-043	2-09-070	2-10-057	2-11-035
2-02-054	2-03-085	2-04-066	2-05-068	2-06-077	2-07-072	2-08-046	2-09-081	2-10-069	2-11-074
2-02-060	2-03-094	2-04-069	2-05-070	2-06-085	2-07-084	2-08-052	2-09-093	2-10-075	2-11-078
2-02-062	2-03-118	2-04-077	2-05-077	2-06-086	2-07-101	2-08-071	2-09-096	2-10-084	2-11-098
2-02-099	2-03-143	2-04-083	2-05-078	2-06-087	2-07-110	2-08-098	2-09-118	2-10-090	2-11-107
2-02-100	2-03-154	2-04-090	2-05-094	2-06-093	2-07-120	2-08-124	2-09-120	2-10-092	2-11-120
2-02-103	2-03-161	2-04-125	2-05-101	2-06-114	2-07-138	2-08-127	2-09-122	2-10-103	2-11-127
2-02-104	2-03-169	2-04-132	2-05-113	2-06-118	2-07-142	2-08-143	2-09-138	2-10-111	2-11-131
2-02-108	2-03-174	2-04-143	2-05-115	2-06-124	2-07-151	2-08-151	2-09-145	2-10-112	2-11-133
2-02-137	2-03-175	2-04-144	2-05-133	2-06-132	2-07-152	2-08-163	2-09-170	2-10-118	2-11-156
2-02-156	2-03-190	2-04-167	2-05-134	2-06-134	2-07-154	2-08-172	2-09-171	2-10-128	2-11-175
2-02-157	2-03-191	2-04-192	2-05-137	2-06-141	2-07-165	2-08-178	2-09-177	2-10-129	2-11-180
2-02-164	2-03-195	2-04-193	2-05-139	2-06-156	2-07-172	2-08-183	2-09-181	2-10-136	2-11-182
2-02-172	2-03-199	2-04-195	2-05-148	2-06-173	2-07-176	2-08-196	2-09-188	2-10-147	2-11-186
2-02-182	2-03-203	2-04-207	2-05-160	2-06-184	2-07-186	2-08-198	2-09-191	2-10-162	2-11-195
2-02-197	2-03-205	2-04-211	2-05-172	2-06-199	2-07-191	2-08-200	2-09-193	2-10-166	2-11-212
2-02-206	2-03-225	2-04-216	2-05-179	2-06-212	2-07-222	2-08-205	2-09-199	2-10-175	2-11-245
2-02-216	2-03-229	2-04-218	2-05-184	2-06-232	2-07-228	2-08-233	2-09-200	2-10-176	2-11-261
2-02-219	2-03-232	2-04-227	2-05-209	2-06-234	2-07-251	2-08-240	2-09-201	2-10-193	2-11-263
2-02-228	2-03-248	2-04-233	2-05-214	2-06-243	2-07-263	2-08-243	2-09-206	2-10-196	2-11-269
2-02-232	2-03-250	2-04-234	2-05-224	2-06-265	2-07-275	2-08-245	2-09-227	2-10-197	2-11-302
2-02-255	2-03-251	2-04-243	2-05-245	2-06-279	2-07-284	2-08-263	2-09-229	2-10-211	2-11-327
2-02-259	2-03-276	2-04-247	2-05-257	2-06-288	2-07-297	2-08-264	2-09-240	2-10-217	2-11-342
2-02-263	2-03-283	2-04-251	2-05-263	2-06-295	2-07-306	2-08-271	2-09-249	2-10-222	2-11-361
2-02-264	2-03-294	2-04-257	2-05-281	2-06-311	2-07-318	2-08-278	2-09-257	2-10-227	2-11-380
2-02-269	2-03-301	2-04-265	2-05-291	2-06-314	2-07-325	2-08-293	2-09-266	2-10-230	2-11-386
2-02-276	2-03-327	2-04-267	2-05-292	2-06-337	2-07-340	2-08-299	2-09-283	2-10-244	2-11-391
2-02-283	2-03-331	2-04-271	2-05-311	2-06-346	2-07-341	2-08-329	2-09-286	2-10-249	2-11-418
2-02-287	2-03-347	2-04-272	2-05-314	2-06-378	2-07-345	2-08-333	2-09-288	2-10-285	2-11-422
2-02-297	2-03-349	2-04-278	2-05-339	2-06-386	2-07-382	2-08-348	2-09-289	2-10-286	2-11-425
2-02-299	2-03-353	2-04-291	2-05-343	2-06-406	2-07-420	2-08-353	2-09-292	2-10-289	2-11-430
2-02-300	2-03-377	2-04-293	2-05-350	2-06-419	2-07-434	2-08-355	2-09-313	2-10-290	2-11-458
2-02-302	2-03-380	2-04-297	2-05-351	2-06-427	2-07-443	2-08-357	2-09-319	2-10-303	2-11-472
2-02-307	2-03-382	2-04-302	2-05-354	2-06-429	2-07-470	2-08-370	2-09-327	2-10-306	2-11-478
2-02-352	2-03-384	2-04-305	2-05-360	2-06-431	2-07-487	2-08-381	2-09-331	2-10-307	2-11-482
2-02-358	2-03-391	2-04-307	2-05-389	2-06-432	2-07-489	2-08-382	2-09-350	2-10-313	
2-02-360	2-03-399	2-04-321	2-05-398	2-06-438	2-07-491	2-08-385	2-09-398	2-10-335	
2-02-373	2-03-402	2-04-340	2-05-401	2-06-439	2-07-495	2-08-407	2-09-401	2-10-345	
2-02-386	2-03-405	2-04-345	2-05-411	2-06-443	2-07-498	2-08-410	2-09-417	2-10-355	

FORPREIM

Appendix A-1 page 5 of 7

Forest Practice Rule Implementation and Effectiveness Monitoring

Region-2 Randomly Selected THPs Numbers (Page 2 of 2)

(version 2/02/07)

<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>
2-02-388	2-03-438	2-04-353	2-05-419	2-06-467		2-08-413	2-09-425	2-10-363	
2-02-403	2-03-443	2-04-354	2-05-426	2-06-470		2-08-418	2-09-443	2-10-370	
2-02-409	2-03-447	2-04-358	2-05-452	2-06-476		2-08-428	2-09-460	2-10-378	
2-02-420	2-03-451	2-04-366	2-05-475	2-06-478		2-08-451	2-09-477	2-10-386	
2-02-430	2-03-458	2-04-371		2-06-485		2-08-462	2-09-485	2-10-397	
2-02-434	2-03-464	2-04-382		2-06-490		2-08-499		2-10-406	
2-02-439	2-03-486	2-04-392		2-06-496		2-08-500		2-10-407	
2-02-444	2-03-488	2-04-395						2-10-411	
2-02-455	2-03-495	2-04-408						2-10-416	
2-02-460	2-03-500	2-04-422						2-10-421	
2-02-463		2-04-424						2-10-447	
2-02-471		2-04-451						2-10-452	
2-02-487		2-04-454						2-10-459	
2-02-489		2-04-0455						2-10-460	
2-02-492		2-04-0465						2-10-468	
2-02-497		2-04-0471						2-10-477	
2-02-498		2-04-0499						2-10-484	
								2-10-494	

FORPRIEM

Appendix A-1 page 6 of 7

Forest Practice Rules Implementation and Effectiveness Monitoring

Region-4 Randomly Selected THPs Numbers (Page 1 of 2)

(version 2/02/07)

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
4-02-019	4-03-015	4-04-020	4-05-002	4-06-001	4-07-006	4-08-002	4-09-027	4-10-012	4-11-007
4-02-022	4-03-026	4-04-030	4-05-004	4-06-007	4-07-033	4-08-003	4-09-028	4-10-020	4-11-012
4-02-025	4-03-063	4-04-033	4-05-010	4-06-014	4-07-046	4-08-009	4-09-040	4-10-033	4-11-047
4-02-033	4-03-070	4-04-061	4-05-016	4-06-016	4-07-047	4-08-030	4-09-048	4-10-041	4-11-053
4-02-038	4-03-077	4-04-066	4-05-036	4-06-020	4-07-050	4-08-051	4-09-067	4-10-048	4-11-060
4-02-044	4-03-089	4-04-074	4-05-039	4-06-033	4-07-054	4-08-054	4-09-071	4-10-083	4-11-069
4-02-058	4-03-115	4-04-087	4-05-042	4-06-071	4-07-076	4-08-060	4-09-084	4-10-086	4-11-081
4-02-065	4-03-117	4-04-101	4-05-060	4-06-073	4-07-078	4-08-065	4-09-106	4-10-133	4-11-086
4-02-068	4-03-134	4-04-123	4-05-061	4-06-077	4-07-089	4-08-066	4-09-109	4-10-141	4-11-087
4-02-085	4-03-136	4-04-125	4-05-069	4-06-081	4-07-093	4-08-092	4-09-122	4-10-144	4-11-108
4-02-091	4-03-149	4-04-137	4-05-081	4-06-083	4-07-095	4-08-100	4-09-125	4-10-146	4-11-113
4-02-099	4-03-153	4-04-149	4-05-088	4-06-085	4-07-100	4-08-102	4-09-133	4-10-150	4-11-116
4-02-105	4-03-155	4-04-160	4-05-097	4-06-100	4-07-136	4-08-118	4-09-140	4-10-189	4-11-122
4-02-131	4-03-178	4-04-172	4-05-107	4-06-103	4-07-143	4-08-125	4-09-144	4-10-204	4-11-131
4-02-135	4-03-190	4-04-178	4-05-112	4-06-118	4-07-152	4-08-132	4-09-150	4-10-208	4-11-133
4-02-137	4-03-191	4-04-195	4-05-123	4-06-123	4-07-187	4-08-147	4-09-169	4-10-210	4-11-140
4-02-140	4-03-197	4-04-196	4-05-136	4-06-127	4-07-201	4-08-152	4-09-172	4-10-211	4-11-161
4-02-155	4-03-208	4-04-211	4-05-142	4-06-137	4-07-207	4-08-163	4-09-192	4-10-221	4-11-163
4-02-169	4-03-214	4-04-212	4-05-149	4-06-146	4-07-224	4-08-183	4-09-223	4-10-222	4-11-169
4-02-170	4-03-219	4-04-218	4-05-152	4-06-169	4-07-233	4-08-189	4-09-226	4-10-238	4-11-170
4-02-191	4-03-233	4-04-236	4-05-155	4-06-182	4-07-236	4-08-195	4-09-228	4-10-245	4-11-180
4-02-201	4-03-238	4-04-259	4-05-167	4-06-196	4-07-261	4-08-200	4-09-235	4-10-248	4-11-192
4-02-220	4-03-246	4-04-282	4-05-171	4-06-217	4-07-274	4-08-213	4-09-239	4-10-285	4-11-193
4-02-226	4-03-250	4-04-286	4-05-176	4-06-229	4-07-298	4-08-225	4-09-240	4-10-300	4-11-204
4-02-227	4-03-255	4-04-293	4-05-179	4-06-233	4-07-299	4-08-227	4-09-243	4-10-322	4-11-210
4-02-228	4-03-261	4-04-299	4-05-197	4-06-251	4-07-302	4-08-238	4-09-253	4-10-324	4-11-213
4-02-257	4-03-277	4-04-305	4-05-202	4-06-264	4-07-304	4-08-263	4-09-261	4-10-339	4-11-219
4-02-262	4-03-288	4-04-310	4-05-205	4-06-266	4-07-312	4-08-264	4-09-263	4-10-340	4-11-238
4-02-263	4-03-294	4-04-324	4-05-230	4-06-273	4-07-313	4-08-271	4-09-265	4-10-343	4-11-247
4-02-269	4-03-296	4-04-326	4-05-237	4-06-278	4-07-316	4-08-277	4-09-267	4-10-354	4-11-270
4-02-279	4-03-299	4-04-328	4-05-238	4-06-290	4-07-325	4-08-285	4-09-297	4-10-378	4-11-277
4-02-285	4-03-311	4-04-353	4-05-240	4-06-296	4-07-329	4-08-295	4-09-302	4-10-385	4-11-282
4-02-287	4-03-351	4-04-360	4-05-244	4-06-300	4-07-331	4-08-311	4-09-318		4-11-289
4-02-291	4-03-353	4-04-363	4-05-248	4-06-307	4-07-342	4-08-313	4-09-351		4-11-312
4-02-294	4-03-360	4-04-368	4-05-257	4-06-318	4-07-364	4-08-315	4-09-362		4-11-314
4-02-329	4-03-380	4-04-378	4-05-268	4-06-339	4-07-375	4-08-318	4-09-394		4-11-319
4-02-341	4-03-390	4-04-382	4-05-269	4-06-349	4-07-382	4-08-320			4-11-323
4-02-345	4-03-400	4-04-384	4-05-281	4-06-350		4-08-323			4-11-345
4-02-346		4-04-392	4-05-289	4-06-361		4-08-342			4-11-360
4-02-350		4-04-396	4-05-293	4-06-366		4-08-346			4-11-368
4-02-352			4-05-304	4-06-368		4-08-351			4-11-371
4-02-397			4-05-305	4-06-375		4-08-357			4-11-372

FORPRIEM

Appendix A-1 page 7 of 7

Forest Practice Rules Implementation and Effectiveness Monitoring

Region-4 Randomly Selected THPs Numbers (Page 2 of 2)

(version 2/02/07)

<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>
			4-05-319	4-06-377		4-08-363			4-11-376
			4-05-323	4-06-380		4-08-365			4-11-381
			4-05-353	4-06-384		4-08-385			4-11-382
			4-05-354	4-06-391		4-08-393			4-11-386
			4-05-366			4-08-397			4-11-391
			4-05-378			4-08-398			
			4-05-381			4-08-400			
			4-05-386						
			4-05-388						
			4-05-391						
			4-05-400						

FORPRIEM

Forest Practice Rules Implementation & Effectiveness Monitoring
(formerly known as Modified Completion Report (MCR) Monitoring)

WLPZ Canopy Sampling Form

Revised 9/14/07

THP No. _____

Observer(s) _____

Date _____

Estimated total length of Class I stream in this THP _____ feet.

Estimated total length of Class II stream in this THP _____ feet.

(Estimate by counting the number of segments delineated on the THP map for the random selection of sample a 200 foot WLPZ segment and multiply by 200.)

CALWATER Planning Watershed No. _____

Watercourse Class I or II (Circle the class that applies to the sampled segment.)

Target sample length is 200 feet.

Actual WLPZ sample length _____ feet.

Prescribed WLPZ width (from THP) _____ feet.

Actual WLPZ width (based on flagging) _____ feet.

Sampled WLPZ width _____ feet.

D = Distance between sample points.

(For standard WLPZ widths of 50, 75, 100, 150 and 200 feet,
D is 14, 17, 20, 24 and 28 feet, respectively.)

$D = 2 \sqrt{\text{width}} =$ _____ feet.

100 x (Hits) / (Hits + Misses) = _____ % Canopy Cover.

Ocular Estimates

within the WLPZ sample segment (circle one per question):

- | | | | | |
|--|----------------|--------|--------|-------|
| 1. Harvesting in WLPZ segment this entry? | YES | NO | | |
| 2. Percent Canopy removed this entry? | 0-10% | 10-30% | 30-50% | > 50% |
| 3. Understory canopy remaining \geq 50%? | YES | NO | | |
| 4. Overstory canopy remaining \geq 50%? | YES | NO | | |
| 5. Class I watercourse in a T&I watershed? | YES | NO | | |
| 6. Overstory meets T&I standards? | N/A | YES | NO | |
| 7. WPLZ Groundcover (live&dead) \geq 75 %? | YES | NO | | |
| 8. Untreated patches of bare mineral soil in
WLPZ \geq 800 sq.ft. or as specified in THP? | ABSENT PRESENT | | | |

Points	Hit (+)	Miss (-)
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		
11.		
12.		
13.		
14.		
15.		
16.		
17.		
18.		
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20.		
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37.		
38.		
39.		
40.		
41.		
42.		
43.		
44.		
45.		
46.		
47.		
48.		
49.		
50.		
Totals		

FORPRIEM

Forest Practice Rules Implementation & Effectiveness Monitoring
(formerly known as Modified Completion Report (MCR) Monitoring)

WLPZ Erosion Features Form

Revised 9/14/07

THP No. _____

Observer(s) _____

Date _____

1. Were erosion features observed in the sample WLPZ segment (circle one)?

YES NO

2. If the answer to the above question is YES, please complete one row in the table below for each erosion feature observed. Use additional sheets if necessary.

Point Number (Nearest WLPZ canopy measurement point.)	Erosion Feature Type (rills, gully, or sediment deposition.)	Related to the Current Entry (circle one)	Width (feet)	Depth (feet)	Length (feet)	Comments (Please note the cause of the problem and if any sediment was transported to the channel.)
		Yes No				
		Yes No				
		Yes No				
		Yes No				

FORPRIEM

Forest Practice Rules Implementation & Effectiveness Monitoring
(formerly known as Modified Completion Report (MCR) Monitoring)

ROAD FORM

Revised 9/14/07

Site Information

THP No.	-	-	Observer(s)	Date
Erosion Hazard Rating (EHR from THP)(circle one): extreme high moderate low				
Type of road (circle one):	permanent	seasonal	temporary	abandoned other _____
Type of road surface (circle one):	native-surface	oiled	gravel/rocked	paved other _____
Position of road segment on slope (circle one):	road in WLPZ	road adjacent to WLPZ	mid-slope road	upper-slope road ridge-road
Date of construction (circle one):	prior to THP	part of THP		
Current status (circle one):	existing	abandoned		
Photos of this road segment were taken, annotated and attached to this monitoring form?	Yes	No		
Recommend follow-up monitoring of this site based on problems found?	Yes	No		

ROAD IMPLEMENTATION FORM

THP No. _____ - _____ Date _____
Observer(s) _____ Distance from the Starting Point in 10-Foot Increments

	000	010	020	030	040	050	060	070	080	090	100	110	120	130	140	150	160	170	180	190	200	210	220
Road Construction																							
CF=Cut & Fill, TC=Thru-Cut FB= Full Bench Cut																							
Watercourse Xing																							
B, C, P-A, OBA, F, A, O																							
Road Surface ^g																							
OS=Out-Sloped IS=In-Sloped FL= Flat CR=Crowned																							
Outside Berm																							
Inside Ditch & Ditch Relief Culvert, Dip or Other																							
Rate Maintenance of Inside Ditch & Ditch Relief. (Circle E, A, MA or D)	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
Waterbreaks	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
WB, RD, NL	MA																						
Percent Road Gradient between Waterbreaks	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
Percent Side Slope between Waterbreaks																							
Rate Waterbreaks constructed with a depth $\geq 6''$ into firm roadbed: (circle E, A, MA or D)	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
Rate Waterbreaks discharge into cover and not onto erodible fills: (circle E, A, MA or D)	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
Other implementation problems explained in comments section.	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D

* E (Exceeds Rule), A (Acceptable), MA (Marginally Acceptable), D (Departure)

ROAD IMPLEMENTATION FORM

THP No. _____ - _____

Observer(s)

Distance from the Starting Point in 10-Foot Increments

Appendix A-3
Page 3 of 6

Revised 9/14/07

	220	230	240	250	260	270	280	290	300	310	320	330	340	350	360	370	380	390	400	410	420	430	440
Road Construction																							
CF=Cut & Fill,																							
TC=Thru-Cut																							
FB= Full Bench Cut																							
Watercourse Xing																							
B, C, P-A, OBA, F, O																							
Road Surface																							
OS=Out-Sloped																							
IS=In-Sloped																							
FL= Flat																							
CR=Crowned																							
Outside Berm																							
Inside Ditch & Ditch Relief																							
Culvert, Dip or Other																							
Rate Maintenance of	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
Inside Ditch & Ditch	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Relief. E, A, MA or D	MA																						
Waterbreaks	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
WB, RD, NL																							
Percent Road Gradient																							
between Waterbreaks																							
Percent Side Slope																							
between Waterbreaks																							
Rate Waterbreaks	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
constructed with a depth $\geq 6''$ into	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
firm roadbed:	MA																						
(Circle E, A, MA or D)	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
Rate Waterbreaks	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
discharge into cover and not	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
onto erodible fills:	MA																						
(Circle E, A, MA or D)	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
Other implementation problems																							
explained in comments section.																							

* E (Exceeds Rule), A (Acceptable), MA (Marginally Acceptable), D (Departure)

ROAD IMPLEMENTATION FORM

THP No. - - - Observer(s) _____ Date _____

Distance from the Starting Point in 10-Foot Increments

	440	450	460	470	480	490	500	510	520	530	540	550	560	570	580	590	600	610	620	630	640	650
Road Construction	450	460	470	480	490	500	510	520	530	540	550	560	570	580	590	600	610	620	630	640	650	
CF=Cut & Fill, TC=Thru-Cut FB= Full Bench Cut																						
Watercourse Xing																						
B, C, P-A, OBA, F, O																						
Road Surface																						
OS=Out-Sloped IS=In-Sloped FL= Flat CR=Crowned																						
Outside Berm																						
Inside Ditch & Ditch Relief																						
Culvert, Dip or Other																						
Rate Maintenance of	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
Inside Ditch & Ditch	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	
Relief. E, A, MA or D	MA																					
Waterbreaks																						
WB, RD, NL, MA																						
Percent Road Gradient																						
between Waterbreaks																						
Percent Side Slope																						
between Waterbreaks																						
Rate Waterbreaks	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
constructed with a depth $\geq 6''$ into	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	
firm roadbed: (circle E, A, MA or D)	MA																					
Rate Waterbreaks	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
discharge into cover and not	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	
onto erodible fills: (circle E, A, MA or D)	MA																					
Other implementation problems																						
explained in comments section.																						

* **E** (Exceeds Rule), **A** (Acceptable), **MA** (Marginally Acceptable), **D** (Departure)

ROAD EFFECTIVENESS FORM

THP No. - - - Observer(s)

Date

Appendix A-3
Page 5 of 6
Revised 9/14/0

Evidence erosion features associated with this road segment (circle one):

present absent

Erosion Codes: RT=Ruts R=Rills G=Gullies M=Mass Wasting S=Cutbank or Sidecast Sloughing O=Other Erosion

Distance from the Starting Point in 10-Foot Increments											
	000	010	020	030	040	050	060	070	080	090	100
Erosion on Cut Slope (insert erosion code)	010	020	030	040	050	060	070	080	090	100	110
Erosion on Road Surface (insert erosion code)	010	020	030	040	050	060	070	080	090	100	110
Erosion on Fill Slope (insert erosion code)	010	020	030	040	050	060	070	080	090	100	110
Erosion downslope of Fill (insert erosion code)	010	020	030	040	050	060	070	080	090	100	110
Sediment Transport beyond road prism (toe of fill) (insert "ST" in appropriate boxes)	010	020	030	040	050	060	070	080	090	100	110
Sediment Transport to Channel Transition Line (insert "STC" in appropriate boxes)	010	020	030	040	050	060	070	080	090	100	110
Other problems (explain in the comments section)	010	020	030	040	050	060	070	080	090	100	110
Distance from the Starting Point in 10-Foot Increments											
	220	230	240	250	260	270	280	290	300	310	320
Erosion on Cut Slope (insert erosion code)	230	240	250	260	270	280	290	300	310	320	330
Erosion on Road Surface (insert erosion code)	230	240	250	260	270	280	290	300	310	320	330
Erosion on Fill Slope (insert erosion code)	230	240	250	260	270	280	290	300	310	320	330
Erosion downslope of Fill (insert erosion code)	230	240	250	260	270	280	290	300	310	320	330
Sediment Transport beyond road prism (toe of fill) (insert "ST" in appropriate boxes)	230	240	250	260	270	280	290	300	310	320	330
Sediment Transport to Channel Transition Line (insert "STC" in appropriate boxes)	230	240	250	260	270	280	290	300	310	320	330
Other problems (explain in the comments section)	230	240	250	260	270	280	290	300	310	320	330

ROAD EFFECTIVENESS FORM

THP No. _____ - _____

Observer(s) _____

Date _____

Erosion Codes: RT=Ruts R=Rills G=Gullies M=Mass Wasting S=Cutbank or Sidecast Sloughing O=Other Erosion

Distance from the Starting Point in 10-Foot Increments											
	440	450	460	470	480	490	500	510	520	530	540
Erosion on Cut Slope (Insert erosion code)	450	460	470	480	490	500	510	520	530	540	550
Erosion on Road Surface (Insert erosion code)											
Erosion on Fill Slope (Insert erosion code)											
Erosion downslope of Fill (Insert erosion code)											
Sediment Transport beyond road prism (toe of fill) (insert "ST" in appropriate boxes)											
Sediment Transport to Channel Transition Line (insert "STC" in appropriate boxes)											
Other problems											

Comments (use additional sheets if needed)

Distance from Starting Point (10-Foot Increments)	Brief Description or Explanation of the feature. (Use additional pages if necessary. Annotated photos may also be attached.) If applicable: Average Dimensions (Length x Width x Depth to the nearest foot)

FORPRIEM

Forest Practice Rules Implementation & Effectiveness Monitoring
(formerly known as Modified Completion Report (MCR) Monitoring)
WATERCOURSE CROSSING FORM

Revised 9/14/07

1. Site Information

THP No.	-	-	Crossing No.	Observer(s)	Date						
Watercourse Class (circle one):	I	II	III	IV							
Type of road (circle one):	permanent	seasonal	temporary	abandoned	other _____						
Type of crossing (circle one):	bridge	culvert	pipe-arch	open-bottom-arch	ford						
Date of the Installation was (circle one):		prior to THP	part of THP								
Current status (circle one):	existing		abandoned								
Culvert diameter (circle one):	N/A	12"	18"	24"	30"	36"	42"	48"	60"	72"	Other _____"
Multiple Culverts:	N/A	number of pipes _____	sizes _____	"	"	"	"	"	"	"	Other _____

Photos of this crossing/approaches taken, annotated and attached to this monitoring form? Yes No

Recommend follow-up monitoring of this site based on problems found?

2. Rate this crossing for implementation by circling **ER** (Exceeds Rule), **A** (Acceptable), **MA** (Marginally Acceptable), **D** (Departure), or **N/A** (Not Applicable) for each Forest Practice Rule on the following implementation rating page (pg. 2).
3. Rate this crossing for effectiveness by checking the appropriate box on each line of the effectiveness page, which follows the implementation page. Make sure that the crossing has been through at least one winter season prior to rating for effectiveness (pg. 3).
4. Make sure the THP Map showing the watercourse crossings sampled is attached.

THP No. -- -- Crossing No.**Date**

Type of Crossing/Rule No.	Brief Rule Description	Implementation Rating (circle one for each rule)						Comments
Observer(s)		ER	A	MA	D	N/A		
<i>All Watercourse Crossings</i>								
923.2(h)	size, #, location of structures sufficient to carry runoff	ER	A	MA	D	N/A		
923.2(h)	size, #, location of structures minimizes erosion	ER	A	MA	D	N/A		
923.2(h)	size, #, location of structures-natural drainage pattern	ER	A	MA	D	N/A		
923.3(a)	permanent xings shown on THP map (+pipe diameter(s) if appropriate)	ER	A	MA	D	N/A		
923.3(c)	unrestricted passage of all life stages of fish allowed (where applicable)	ER	A	MA	D	N/A		
923.3(f)	crossingfills built or maintained to prevent diversion	ER	A	MA	D	N/A		
923.4(c)	waterbreaks maintained as specified in 914.6	ER	A	MA	D	N/A		
923.4(d)	crossing open to unrestricted passage of water	ER	A	MA	D	N/A		
923.4(e)	permanent constructed/reconstructed--100-year flood flow + sediment and debris passage	ER	A	MA	D	N/A		
923.4(m)	Inlet/outlet structures, additional drainage structures, etc. repaired/replaced/installed as needed to protect water crossing/approaches maintained to prevent diversion	ER	A	MA	D	N/A		
923.4(n)		ER	A	MA	D	N/A		
<i>Culvert/Pipe Arch</i>								
923.2(d)(Coast)	fills across channels built to minimize erosion	ER	A	MA	D	N/A		
923.2(i)	where evidence of debris likely to significantly reduce culvert capacity below design flow, oversize culverts, trash racks, or similar devices installed in a manner that minimizes culvert blockage	ER	A	MA	D	N/A		
923.2(o)	no discharge on fill unless energy dissipators used	ER	A	MA	D	N/A		
923.4(d)	trash racks installed where needed at inlets	ER	A	MA	D	N/A		
923.4(l)	drainage structure & trash rack maintained/repaired to prevent blockage	ER	A	MA	D	N/A		
<i>Abandoned/Removed</i>								
923.3(d)(1)	removed--fills excavated to reform channel	ER	A	MA	D	N/A		
923.3(d)(2)	removed--cut bank sloped back to prevent slumping	ER	A	MA	D	N/A		
923.3(d)(2) [required]	removed--where needed, stabilizing treatment applied	ER	A	MA	D	N/A		
923.8	abandonment--maintenance free drainage	ER	A	MA	D	N/A		
923.8	Abandonment--minimize concentration of runoff	ER	A	MA	D	N/A		
923.8(b)	abandonment--stabilization of exposed cuts/fills	ER	A	MA	D	N/A		
923.8(c)	abandonment--grading of road for dispersal of water	ER	A	MA	D	N/A		
923.8(d)	abandonment--pulling/shaping of fills	ER	A	MA	D	N/A		
923.8(e)	abandonment--fills excavated to reform channel	ER	A	MA	D	N/A		
923.8(e)	abandonment--cutbanks sloped back	ER	A	MA	D	N/A		
923.8(e)	removal not feasible--diversion potential handled	ER	A	MA	D	N/A		
<i>Tractor Road Crossing</i>								
914.8(b)	structures (bridge, culvert, etc.) used where water present during life of the crossing	ER	A	MA	D	N/A		
914.8(c)	unrestricted fish passage in Class I watercourse	ER	A	MA	D	N/A		
914.8(d)	skid crossing fill removed and banks sloped properly	ER	A	MA	D	N/A		

Revised 9/14/07

THP No.	Crossing No.	Observer(s)	Date
		<u>WATERCOURSE CROSSING EFFECTIVENESS</u>	
<p>[ALL] Fill Slopes (Check appropriate box on each line for all crossings.)</p> <p>1) Gullies (>6" in deep) <input type="checkbox"/> N/A <input type="checkbox"/> None <input type="checkbox"/> Small gullies, but not enlarging <input type="checkbox"/> Large gullies or enlarging <input type="checkbox"/> N/A <input type="checkbox"/> None <input type="checkbox"/> cracks present but stabilized <input type="checkbox"/> cracks threaten stability of fill <input type="checkbox"/> N/A <input type="checkbox"/> None <input type="checkbox"/> 0-1 cubic yard <input type="checkbox"/> 1-10 cubic yard <input type="checkbox"/> >10cubic yard</p> <p>2) Cracks <input type="checkbox"/> N/A <input type="checkbox"/> None</p> <p>3) Slope Failure <input type="checkbox"/> N/A <input type="checkbox"/> None</p> <p>[ALL] Road Surface Draining to Crossing (Check appropriate box on each line for all crossings.)</p> <p>1) Gullies (>6 in deep) <input type="checkbox"/> N/A <input type="checkbox"/> None <input type="checkbox"/> Small gullies, but not enlarging <input type="checkbox"/> Large gullies and enlarging <input type="checkbox"/> N/A <input type="checkbox"/> Functional <input type="checkbox"/> Allows some water to reach crossing <input type="checkbox"/> Allows all water to reach crossing <input type="checkbox"/> N/A <input type="checkbox"/> Open <input type="checkbox"/> Some sediment/debris accumulation <input type="checkbox"/> Blocked with sediment and debris <input type="checkbox"/> N/A <input type="checkbox"/> None <input type="checkbox"/> Ponding present but does not <input type="checkbox"/> Ponding present and threatens <input type="checkbox"/> threatens stability of fill material <input type="checkbox"/> the stability of the fill material <input type="checkbox"/> Rutting <input type="checkbox"/> N/A <input type="checkbox"/> None <input type="checkbox"/> Some ruts but drainage not impaired <input type="checkbox"/> Rutting impairs road drainage</p>			
<p>[] Culvert Design/Configuration (For culvert crossings, check box and check appropriate box on each line below, 1 thru 10.)</p> <p>1) Scour at Inlet <input type="checkbox"/> N/A <input type="checkbox"/> None <input type="checkbox"/> Minor scour—not undercutting fill <input type="checkbox"/> Major scour, may be undercutting fill <input type="checkbox"/> N/A <input type="checkbox"/> No evidence <input type="checkbox"/> Minor scour—extends < 2 channel widths <input type="checkbox"/> Major scour, extends > 2 channel widths <input type="checkbox"/> N/A <input type="checkbox"/> scour of scour <input type="checkbox"/> scour undercuts crossing fill <input type="checkbox"/> Diversion Potential <input type="checkbox"/> N/A <input type="checkbox"/> Not possible <input type="checkbox"/> Road slopes downward in one direction with drainage structure <input type="checkbox"/> If culvert fails, overflow will be diverted out of channel and down road <input type="checkbox"/> Plugging <input type="checkbox"/> N/A <input type="checkbox"/> None <input type="checkbox"/> Sediment/debris blocking <30% <input type="checkbox"/> Sediment/debris blocking >30% of inlet/outlet <input type="checkbox"/> Alignment <input type="checkbox"/> N/A <input type="checkbox"/> Appropriate <input type="checkbox"/> Low angle channel approach <input type="checkbox"/> High angle channel approach <input type="checkbox"/> Degree of Corrosion <input type="checkbox"/> N/A <input type="checkbox"/> None/minor <input type="checkbox"/> Moderate—some metal missing <input type="checkbox"/> Severe—pipe easily punctured <input type="checkbox"/> Crushing Inlet/Outlet <input type="checkbox"/> N/A <input type="checkbox"/> None <input type="checkbox"/> Pipe deformed but <30% blocked <input type="checkbox"/> Pipe deformed and >30% blocked <input type="checkbox"/> Pipe Length <input type="checkbox"/> N/A <input type="checkbox"/> Appropriate <input type="checkbox"/> Length causing minor fill erosion <input type="checkbox"/> Length related to major erosion around pipe <input type="checkbox"/> Gradient <input type="checkbox"/> N/A <input type="checkbox"/> Appropriate <input type="checkbox"/> Inlet slightly too low or high in fill <input type="checkbox"/> Inlet too high or low—causing debris to collect <input type="checkbox"/> Piping <input type="checkbox"/> N/A <input type="checkbox"/> None <input type="checkbox"/> Flow passes beneath or around culvert</p> <p>[] Non-Culverted Crossings (For removed/abandoned crossings, check box and check appropriate box on each line below.)</p> <p>1) Armoring <input type="checkbox"/> N/A <input type="checkbox"/> Appropriate <input type="checkbox"/> Minor downcutting evident <input type="checkbox"/> Major downcutting evident <input type="checkbox"/> Scour at Outlet <input type="checkbox"/> N/A <input type="checkbox"/> None <input type="checkbox"/> Minor scour—not undercutting fill <input type="checkbox"/> Major scour, maybe undercutting fill <input type="checkbox"/> Diversion <input type="checkbox"/> N/A <input type="checkbox"/> Not possible <input type="checkbox"/> Road slopes downward in one direction but unlikely to divert flow <input type="checkbox"/> Overflow will be diverted down road</p> <p>[] Removed/Abandoned Crossings (For removed/abandoned crossings, check box and check appropriate box on each line below.)</p> <p>1) Bank Stabilization <input type="checkbox"/> N/A <input type="checkbox"/> Dense cover <input type="checkbox"/> >50% of banks covered and/or stabilized <input type="checkbox"/> <50% of banks have effective cover or <input type="checkbox"/> N/A <input type="checkbox"/> None <input type="checkbox"/> Small gullies, not enlarging <input type="checkbox"/> Large gullies or enlarging <input type="checkbox"/> Gullies (>6 in deep) <input type="checkbox"/> N/A <input type="checkbox"/> <1 cu yd <input type="checkbox"/> >1 cu yd and enters channel <input type="checkbox"/> Slope Failure <input type="checkbox"/> N/A <input type="checkbox"/> Near natural <input type="checkbox"/> Minor difference from natural channel <input type="checkbox"/> Major difference from natural channel <input type="checkbox"/> Channel Configuration <input type="checkbox"/> N/A <input type="checkbox"/> Sloped to <input type="checkbox"/> <1 cubic yard transported to channel <input type="checkbox"/> >1 cubic yard transported to channel <input type="checkbox"/> Excavated Material <input type="checkbox"/> N/A <input type="checkbox"/> min. erosion <input type="checkbox"/> Minor problem(s) noted <input type="checkbox"/> Maintenance Free Drainage <input type="checkbox"/> N/A <input type="checkbox"/> Sufficient <input type="checkbox"/> Major problem(s) noted</p>			

Appendix A-5: Random Number Table
 (Note: Provided for convenience. Any random number table or random number generating calculator may be used to randomly select WLPZ reaches and road segments.)

97	38	55	23	12	87	39	84	32	23	26	91	01	11	26	01	24	06	58	20	33	46	38	86	23
84	95	87	34	95	31	23	12	64	75	89	28	38	15	91	81	89	08	86	08	88	20	02	11	67
11	52	38	09	94	32	47	35	42	67	39	33	89	97	16	28	94	86	93	86	96	13	43	85	99
38	69	94	97	10	44	42	85	46	88	56	36	63	58	22	89	19	26	82	25	94	15	54	65	62
23	99	36	33	41	99	76	22	29	19	92	33	92	15	71	47	57	74	69	03	65	57	90	53	17
09	15	95	74	87	09	63	82	63	29	84	57	45	80	07	13	57	40	58	34	21	93	90	39	21
55	75	91	36	57	38	30	89	64	42	01	84	83	12	79	32	09	56	03	81	90	88	00	71	92
05	29	95	78	06	10	41	62	18	37	42	91	98	43	33	20	58	62	80	65	19	90	07	84	49
30	04	29	90	89	64	25	66	36	41	99	99	15	43	86	34	10	05	99	83	08	02	18	01	22
40	10	91	52	27	21	18	64	61	04	85	55	16	90	71	31	95	15	86	74	87	80	75	71	27
93	18	86	63	72	22	53	44	23	89	38	06	46	04	79	67	77	33	21	75	40	51	74	60	53
63	71	69	30	23	12	85	90	05	07	67	33	56	52	60	21	50	72	26	28	48	67	31	87	61
51	38	78	69	65	25	98	73	40	31	12	04	99	51	09	49	04	32	68	68	54	64	15	25	68
98	41	81	63	70	58	43	39	18	54	46	93	18	54	46	31	47	85	39	84	80	84	07	64	76
08	44	37	01	53	59	67	11	11	53	54	98	16	52	52	39	32	22	18	11	48	03	06	77	17
17	30	92	82	09	42	37	88	43	35	11	54	89	05	61	10	46	27	43	33	88	92	72	62	01
74	87	89	10	02	19	45	29	65	70	77	81	98	78	67	05	62	57	08	79	30	32	62	91	87
61	81	52	99	80	11	55	21	98	02	08	26	01	20	16	07	42	88	56	51	31	96	14	85	49
55	08	43	08	22	50	28	03	18	00	80	79	60	18	33	92	36	13	50	41	43	59	82	16	65
44	38	47	15	16	96	03	51	42	15	35	96	40	87	91	56	91	13	58	85	40	06	36	64	30
12	45	97	68	57	62	36	61	03	29	46	60	79	85	99	91	13	99	95	58	75	14	74	88	12
19	95	23	05	45	01	87	81	18	92	36	94	07	14	08	90	32	51	29	61	50	60	34	92	25
71	55	86	72	94	77	08	55	65	50	33	94	81	52	36	31	53	12	74	88	59	99	35	95	95
07	32	94	03	20	66	29	78	65	70	30	56	59	50	24	51	75	48	73	11	29	77	08	36	36
70	35	58	59	25	89	22	60	77	71	24	13	38	20	83	02	48	11	67	95	38	97	15	58	18
62	99	34	08	06	81	46	09	16	82	95	17	13	46	36	51	36	87	56	95	70	89	40	82	82
19	44	35	31	20	16	05	25	26	38	98	94	18	38	88	10	90	29	01	12	48	85	52	97	22
77	76	94	64	49	45	39	58	07	88	32	11	43	09	51	32	69	31	63	02	33	47	08	94	85
97	43	81	59	46	59	26	04	63	86	87	31	55	50	66	11	37	04	68	14	57	17	08	82	48
09	77	93	46	95	36	98	08	77	39	71	44	48	10	19	54	89	24	83	47	06	79	01	78	43
71	09	43	23	16	33	93	21	87	89	16	53	05	53	16	98	96	30	89	49	83	32	23	13	32
25	19	47	70	48	16	91	39	59	80	66	77	96	02	08	59	58	48	91	81	04	31	64	65	15
43	23	23	81	42	61	42	37	17	76	75	40	18	81	33	51	68	04	41	00	72	82	28	68	03
81	04	78	50	20	33	21	64	70	10	49	43	03	86	53	25	50	24	70	63	01	66	13	27	55
19	62	59	60	23	26	11	30	12	63	26	60	61	15	83	27	41	02	61	80	72	19	91	56	53
32	32	48	94	61	60	43	29	67	86	20	90	03	18	48	22	42	82	59	84	31	00	92	15	87
79	73	88	64	27	89	92	95	64	78	40	06	16	28	66	54	93	14	19	00	39	11	13	27	55
05	12	93	24	38	18	25	64	65	51	81	15	80	43	36	94	89	58	80	80	76	25	65	69	
59	72	45	18	64	49	67	78	83	66	72	92	63	42	78	21	14	35	00	16	05	92	24	18	
22	75	30	52	34	00	43	50	50	91	10	64	18	60	30	48	99	84	23	37	20	03	50	50	05
33	19	47	70	48	16	91	39	59	80	66	77	96	02	08	59	58	48	91	81	04	31	64	65	15
47	02	27	40	96	41	44	06	54	76	83	32	32	56	15	05	45	22	54	07	49	70	54	48	84
81	04	78	50	20	33	21	64	70	10	49	43	03	86	53	25	50	02	99	53	04	31	64	65	15
22	75	30	52	34	00	43	50	50	91	10	64	18	60	30	48	99	84	23	37	20	03	50	50	05
33	00	29	08	87	42	59	40	24	97	44	99	13	56	87	95	02	47	97	89	23	13	51	45	37
86	21	48	23	45	01	80	49	33	99	57	92	46	06	55	60	98	81	40	20	72	49	42	81	62
47	02	27	40	96	41	44	06	54	76	83	32	32	56	15	05	45	22	54	07	49	70	54	48	84
88	82	00	84	16	82	67	66	27	89	78	31	98	11	56	27	07	56	99	27	88	30	28	18	01

Source: A. Hald, *Statistical Tables and Formulas*. John Wiley and Sons, Inc., New York, 1952, pp. 94-95.